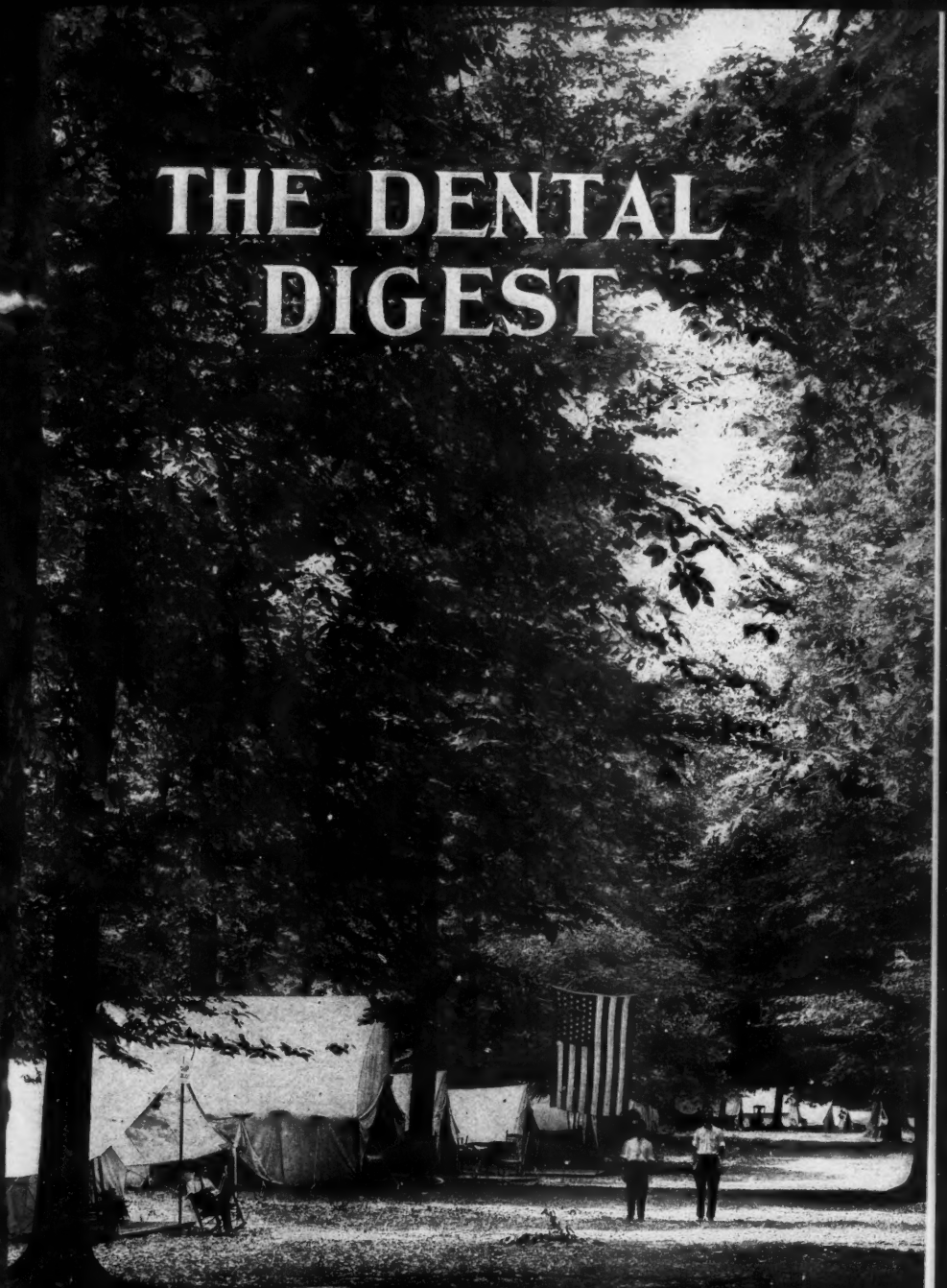
THE DENTAL DIGEST



JULY 1913
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EDITED BY
GEORGE WOOD CLAPP, D.D.S.
PUBLISHED BY
THE DENTISTS' SUPPLY CO.

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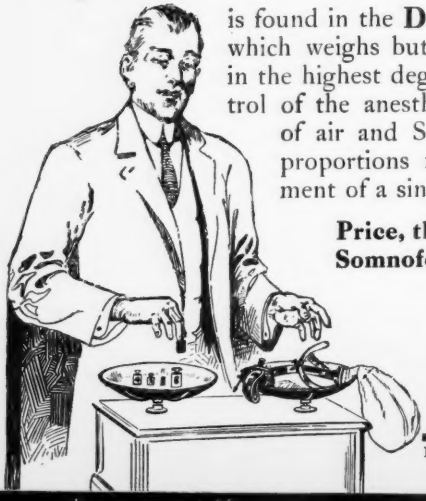

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THE DENTAL DIGEST

GEORGE WOOD CLAPP, D.D.S., Editor

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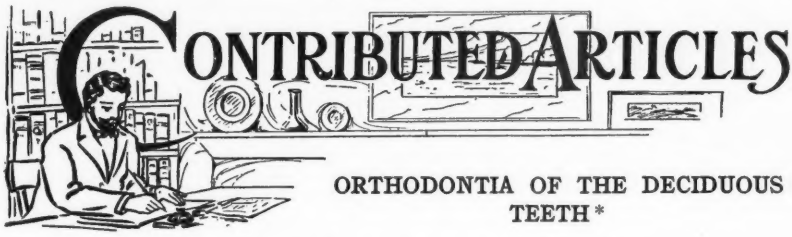


ORTHODONTIA OF THE DECIDUOUS TEETH*

BY E. A. BOGUE, M.D., D.D.S., NEW YORK CITY

Ninth Paper

Now for some illustrations of cases that have been treated with these different appliances, and as failures often teach us more than successes I shall not hesitate to show some cases wherein certain steps were at first failures. To commence with the screw spreader.

Molly B., nine and one-half years old, May 19, 1911. Mouth breather, had been operated upon for adenoids and tonsils at three and one-half years of age and again the following year, as the adenoids returned.

When six or seven years old was again ill, consequently had not been a very vigorous child up to that date. Narrow arches and posterior occlusion. The screw fixtures were adjusted above and below June 12, 1911, and in two weeks we had gained ½ centimeter in width of arch between the second temporary molars; not quite so much anteriorly. Put in Ainsworth arches for the summer without removing the screw, and did not see her again until October 20th, when the bands around the molars were recemented.

* These papers were commenced in the October, 1912, number.

April 1, 1912, put on intermaxillary pressure which, within the next four months, changed the occlusion from posterior to mesial. On December 14, 1912, put a retainer behind the 4 lower incisors attaching it by means of bands around the lower cuspids carefully cemented to place, and removed all other regulating fixtures from the mouth. As

1.—Molly B., model open, with fixtures in place above and two nut fixtures below.
2.—Molly B., model closed, to show posterior occlusion.
3.—Finished case open, to show lingual retainer.
4.—Finished case closed, to show occlusion, an arrow to point it out on the two lower models.

the occlusion of the principal molars was correct, the patient only needed to close the teeth in order to have the upper incisors and bicuspids held perfectly in place by means of their articulation with the lower teeth.

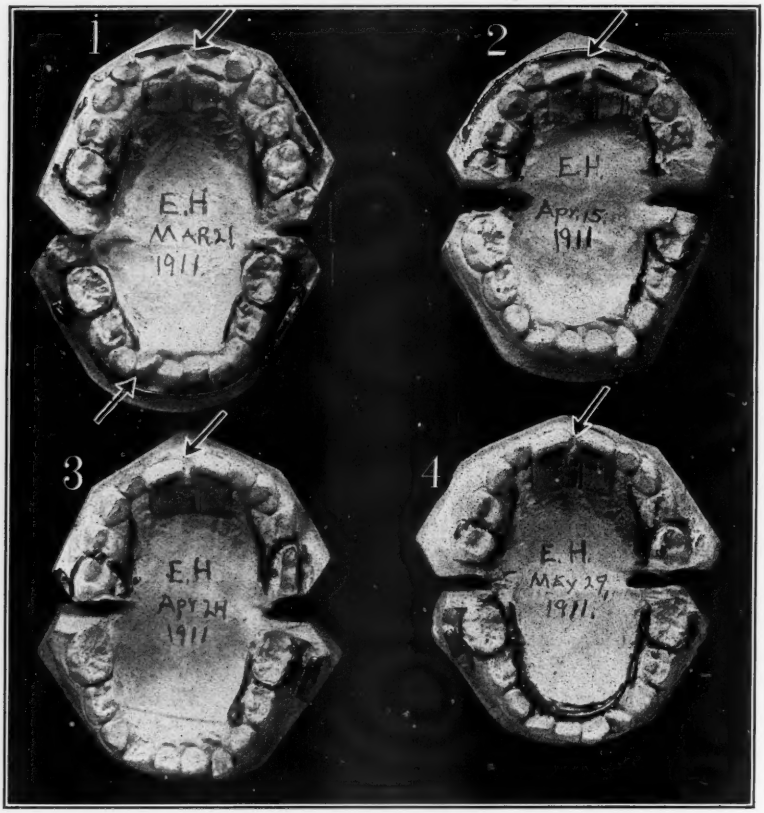
Elizabeth H., April, 1910, six years old; the temporary teeth close

together except where one lower incisor has erupted. The child went off for her summer vacation. Did not return for seven months. November 15, 1910, seven years old. Temporary teeth still close together; another lower incisor erupting irregularly. March 14th, 3 millimeters

Elizabeth H.—Arrows point to irregularity of lower incisor teeth in models 1 and 2 and in 3 show lack of space for permanent incisors to erupt properly. No. 4 shows space gained. February, 1911, three and a half months later, both arches have spread about 2 millimeters.

gained; two upper central incisors fallen out, four incisors just appearing. March 21st, one week later two permanent central incisors visible. Two millimeters gained between the lower cuspids. April

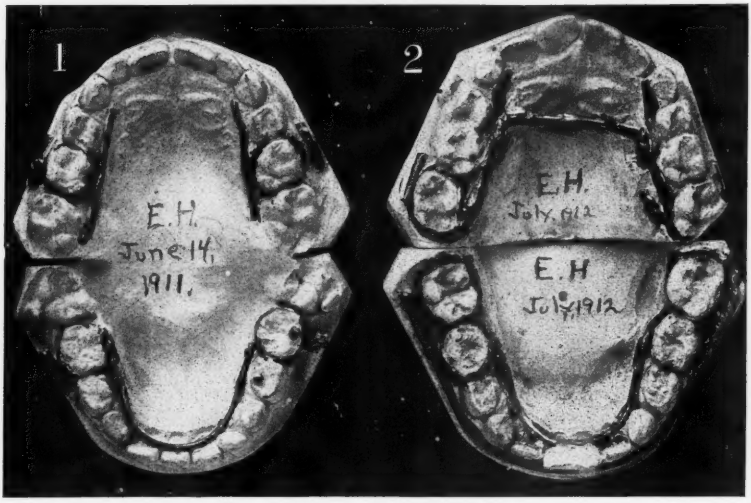
15th, incisors one-third down, plenty of room in which to erupt. May 29th, same space between lateral incisors as on April 5th. Permanent centrals approximating each other. The left lower lateral incisor fell out April 24th. Its position on May 29th is plain to see, just coming through the gum. On June 14, 1911 (page 369), both rows of teeth had spread to nearly the normal size, and the four lower incisors and



The arrows point to—No. 1. Two permanent central incisors visible. No. 2. Incisors one-third down. No. 3. Left lower lateral incisor fallen out. No. 4. Left lower lateral incisor just coming through gum.

two upper centrals were rapidly developing. The rate of growth where the obstruction of irregular teeth has been removed is clearly shown, although it cannot be supposed that the rate is the same as it would have been had the case erupted normally. March 14, 1912, found the principal molars not yet in articulation, but needing intermaxillary rubber springs to draw the lower molars forward and the upper ones backward

until proper occlusion shall have been attained. March 23, 1912, found nasal fossæ not enlarged and septum curved to the left. I advised rapid spreading, and this process was advised against by other consultants. April 10, 1912, the father decided to accept my advice, and steps were taken to apply a screw fixture, which fixture was applied, and cemented to place April 18th. In July I received a letter from the father that the nasal septum was entirely straight, both nasal passages ample, and the child in better health than she had been for some time. In January, 1913, the child being in Europe, I received another letter from the father confirming what he had before written, and again expressing



No. 1. Both rows of teeth spread to nearly normal size. No. 2. Nasal septum entirely straight.

gratitude in regard to the favorable changes that have taken place in the case of his little daughter.

Alex. P., seven years old, December, 1911 (pages 370, 371, 372); remarkably good looking set of temporary teeth all being close together, the greatest noticeable defect being a slight irregularity of the lower incisors.

A critical examination shows that the right sides of the arches are not quite as fully developed as the left. The X-ray shows a corresponding irregularity in the two lower permanent incisors which stand obliquely.

An X-ray of the upper incisors shows a lapping of the lateral incisors over the centrals.

The indication is for a little more room for the more easy eruption of the permanent teeth.

Considering his age, and that the temporary teeth were still appar-

ently firm, I placed a screw fixture above and an Ainsworth arch below, with finger springs soldered to the temporary molar bands, and on February 15, 1912, applied pressure. On February 27th I thought we had nearly room enough in the nasal cavity and among the teeth. On March 25th placed an Ainsworth arch on the *permanent* upper molars as they had not spread laterally as much as the temporary arch of teeth.

Alex. P., 7 years old. (See text on pages 369–372.)

April 8th turned the screw two turns and found the temporary and permanent molars in alignment. June 25th made all fixtures firm, turned up screw once and dismissed patient for three months with all the fixtures in place.

September 16th took impressions, found fixtures loose, removed, cleaned and replaced them. Very slight pressure was applied from time to time until October 29, 1912, when the teeth were found well articulated. November 6th the right lower temporary lateral was taken out and the permanent lateral was found just behind and lingual to it.

The finger springs were in such position that they guided the lower incisors to their places as they erupted.

February 24, 1913, impressions were taken to show the stage of development at that date. It will be seen that the lower incisors are almost exactly in arch, and the molars are in fairly good articulation, the principal molars especially.

The upper incisors have ample room to come forward, and as the fix-

Alex. P. (See text on pages 369–372.)

tures are all in place any little touches necessary to direct the permanent teeth into their proper position can easily be given. As we have plenty of room it is hoped that tongue and lips may do the necessary guiding.

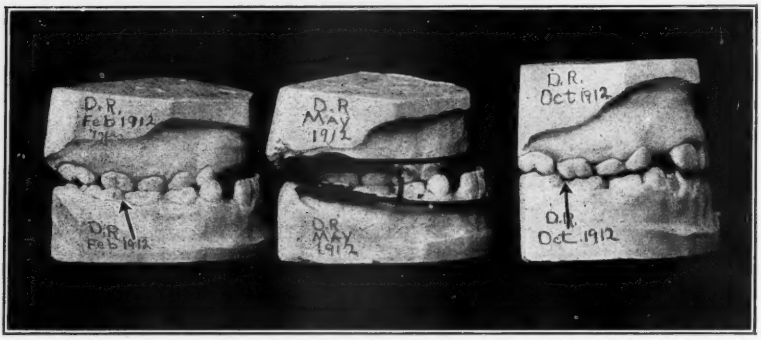
April 1st the articulation had improved so much that nothing was done, and we now await the regular development of the remainder of the permanent teeth.

As the principal molars are correctly articulated, and there is plenty of room for the eruption of all the other teeth; and as the boy sleeps with his mouth closed, so that the tongue and lips can perform their respective functions of outward and inward pressure undisturbed, I have no fears for the results.

David R.'s condition has existed since he was about 2 years of age. (See 3 lower models on this page.)

Notice right lateral incisor erupting behind the wire finger spring. As the incisors grew upward and got long enough the finger springs were sprung behind them and guided them into correct positions.

Attached screw spreader to upper teeth and applied pressure. On March 16th attached fixture to permanent upper molars from which I stretched intermaxillary rubbers to lower Ainsworth arch. At the end of six months the teeth were in the position shown in the illustration. The principal molars were in fairly correct occlusion, the upper incisors



David R., 7 years and 2 months old. Prognathous lower teeth and anterior protrusion of mandible.

overlapped the lower ones as they should, and there was nearly room for the permanent teeth to erupt.

During these six months the patient was not seen more than 20 times.

At this stage the fixtures were removed by a dentist in the country and have not been replaced. I have the satisfaction of knowing however that as the principal molars are in their correct occlusion and the incisors are very nearly so the child can never again revert to his previous condition of deformity.

The keystone to correct occlusion is the principal molar, when *it* is right, or rather when all four of them are right, almost all other irregularities of teeth seem simple to correct, and simple to retain, but if the principal molars are not guided into correct occlusion the results of regulating teeth will *never* be satisfactory.

(*This article is expected to be continued in August number.*)

Dear Doctor:

For the past five years I have discarded the use of the Carpet Tack and gutta-percha, used to force and keep the gum away from the end of root after preparation to receive a Logan or any other dowel crown. I consider it does not raise the standard of our profession in the sight of our clientele and the public at large.

The method I use for the preparation of root is the following: Place patient in the stage of analgesia by the use of Nitrous Oxide and Oxygen, or Somnoform and Air; cut tooth off with a small disk-shaped Arkansas stone, or a rose head bur. I use a rose head bur to cut away all of the dentine until I reach the inner side of the enamel, then I use a fine stone or a very fine cut root facer to remove the desired amount of enamel. I always have on hand quite a number of dowel crowns that I use as a temporary tooth until I send to supply house for a crown of the proper size and shade. Prepare root to receive dowel of crown. Heat dowel and gutta-percha again; place crown in position and force home, remove same and trim off surplus of gutta-percha. Mix a very small amount of cement, cover the gutta-percha on dowel with the same, place into position and hold firmly for a few minutes until cement sets. By using a short dowel any desired treatment can be used in tooth and allowed to remain for any length of time. Crowns placed in position by this method will remain in a fixed position for years.

To remove crown use a hot blast of air from chip blower until crown feels warm, then insert a sharp-pointed scaler slightly heated between crown and root and you will be surprised how easily the crown can be removed. You can reset a crown as often as desired by this method without any discomfort to patient.—P. F. Beam, D.D.S., Hackettstown, N. J.

THE NEW HOME OF COLLEGE OF DENTAL AND ORAL SURGERY OF NEW YORK

By George Wood Clapp, D.D.S., New York

It is in keeping with the importance of New York as a metropolis, and with the reputation long held by the leaders whom New York has contributed to the profession of dentistry, that the dental schools located here should be second to none. An important feature in the conduct of a dental school is a building arranged especially for the purpose.

It has long been in the minds of the Trustees and Faculty of The College of Dental and Oral Surgery to construct for the institution just the sort of a home that such a school should have. Years of thought have been devoted to the general plan and the perfection of its details. For a year or more these plans have been taking shape in bricks and mortar. And there is now nearly ready for dedication one of the best arranged and most completely equipped dental college buildings in the world.

THE LOCATION

The location is most happy. The section of the city where the greatest facilities for hospital work abound, near the Bellevue Hospital and Cornell University Medical School, offers the prospective dental student opportunities for seeing and treating hospital cases, which under other conditions he might never have. With this in mind, a plot of ground on Thirty-fifth Street, just east of Second Avenue, was selected. It is most accessible from all parts of the city and adjoining country by means of car lines which pass on three sides. The location is pleasant, for it faces on St. Agnes's Park, assuring an open green place in front. And just across the park may be seen a great public school and a branch of the public library.

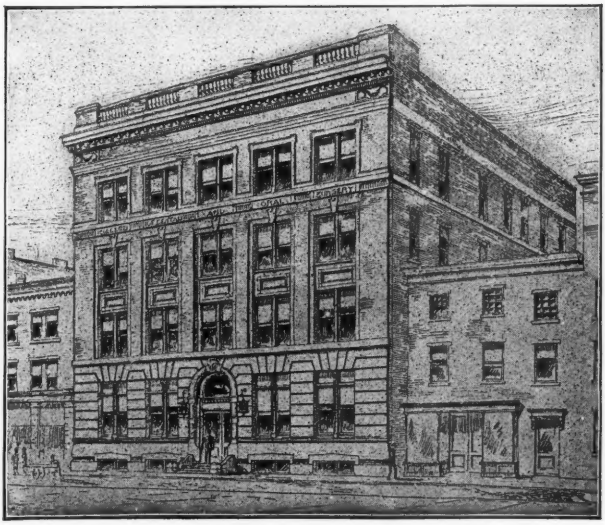
The architecture of the front of the building strikes the observer as dignified and pleasing, and in keeping with the purpose of the building.

FIRST-FLOOR PLANS

From the instant that one enters the door he is impressed with the provisions for efficiency. It is apparent that these plans have been perfected by those who have had long experience in the handling of dental students and of the public necessary to the clinic. Shortly after entering, the prospective patient will be received by an attendant, will

be given a card filled out with name, address, etc., and conducted into a room adjoining the examination room. Here the card will be filled out to indicate what shall be done, and the patient will be sent by elevator to the waiting room for patients on the top floor.

Just beyond the first-floor quarters for the accommodation of patients, one comes to a short flight of steps, leading to the entrance of the Cooper Auditorium. While other lecture rooms for classes and sections abound in the building, this beautiful auditorium will doubtless be the main lecture room for the student body. Fine oak settees



afford seating room for 350 students. The table on which demonstrations will be given and the screen on which slides can be shown is visible from every seat. This beautiful room is the gift of Mrs. Washington L. Cooper in memory of her husband, who was a dear friend of Dr. William Carr.

The class of 1914 has shown its interest in the welfare of the school by donating a very fine reflectoscope, with all the necessary attachments.

Passing by the rooms for the College Offices, which are to the left of the entrance, one comes to the Brown Auditorium, which differs in form and purpose from the Cooper Auditorium. New York is frequently visited by dentists of note from all parts of the world, some of whom are graduates from this school, and others who are interested in

its work. It is fitting that rooms should be available where they can meet the student body and other dentists more informally than in the Cooper Auditorium, and where receptions can be held. The Brown Auditorium is admirably suited to that purpose. It may be arranged to hold an audience of moderate size and have the room appear comfortably filled, or to hold a very large audience. Miss Kate Collins Brown donated this fine room in memory of her brother, a prominent physician of New Orleans. It is a memorial to him, but it is also a testimony of her interest in the welfare of humanity.

SECOND-FLOOR PLANS

A suite of well-arranged rooms extending across the front of the second floor provides excellent facilities for work in histology, anatomy, physiology, and operative technique. The importance of X-ray work as a means of diagnosis has not been overlooked, and complete facilities for the making of X-ray photographs are at hand.

On this floor also is found a suite wherein each professor has a private room for the collection and preservation of the materials used in teaching and for the prosecution of original research.

Here also is a large lecture room for freshmen. It has seating capacity for 150 students.

THIRD-FLOOR PLANS

The entire third floor is given over to the rooms for prosthetic dentistry in its several forms, to the laboratories for the study of chemistry, the rooms for orthodontia, and the extracting room, which is the smallest room in the building. One has been impressed with the pleasing and sanitary finish of the building on the other floors, but the fine oak finish on this floor gives it a singularly handsome appearance.

FOURTH-FLOOR PLANS

Practically the entire fourth or top floor is given over to the Operative Clinic. One is immediately struck with the abundance of fine light which streams through the big windows and through skylights opening onto the roof. In the center of the floor the light is excellent until the late hours of the afternoon.

This room is well fitted to stand as an exposition of cleanliness and intelligent arrangement. One feels on entering it that here are the facilities for being served as one would like.

The floor attracts special attention. It is of some material resembling cement, and offers equal facilities for cleanliness, but it feels

softer to the feet. One gets the impression that it would yield just enough under the foot to prevent that fatigue which is not unknown to those of us who spend our days on the ordinary cement floors.

THE PALM GARDEN

However popular or unpopular the floors so far described may be with those who are students here, one floor is bound to be popular on pleasant days. It is what Dr. Carr jokingly calls the Palm Garden, by which he means the roof, which has been fitted to serve as an open-air study room. Shade and seats will be provided, and here during study hours the students may enjoy quiet and fresh air. The front wall of the building has been carried up in such manner as to insure comparative privacy.

THE METALLURGY AND LAUNDRY ROOMS

In the large basement of the building are found the boilers, the power for the elevators, a complete laundry for the handling of all linen by methods in keeping with professional teachings, a huge sterilizer, by which every drop of water used in the building is rendered sterile before reaching the faucets, and extensive quarters for metallurgy laboratories.

The Faculty and Trustees are to be congratulated upon the broad-minded vision which first conceived and then perfected so fine a plant, and upon the intelligence and perseverance which have brought it into being.

It seems that everything has been provided which is required for the equipment of a great dental college, and a proper center around which the friends of the school and of good dentistry may rally to bring to pass that day when New York shall assume its rightful place in the number and efficiency of men whom it sends into the practice of dentistry.

DR. GYSI'S CLASSES WELCOMED

The importance of the work already done by Professor Gysi for the benefit of the dental profession, and of the classes which he will teach in this country in August and September, have justified the Faculty and Trustees in providing quarters in this beautiful building for these classes and in affording them every facility required for the most efficient discharge of their work.

Professor Gysi's classes will, therefore, be held here, beginning August 4th and September 2d. Further information concerning these classes may be had by addressing the editor of this magazine.

SOME FACTS OF INTEREST TO MOUTH HYGIENE WORKERS

By W. G. Ebersole, M.D., D.D.S., Sec'y-Treas., National Mouth Hygiene Ass'n, Cleveland, Ohio

In the March issue in a number of dental journals of this country there appeared an article which we wrote, entitled "Some Things that Should be Known about the Mouth Hygiene Movement of this Country." In this article we gave something of a résumé of the status of Mouth Hygiene work in this country and set forth some of the important features which led to the formation of the National Mouth Hygiene Association, which was formed for the purpose of having an organization which would permit the members of all professions and the laity to coöperate in spreading the Mouth Hygiene propaganda.

The work of the Association and its plans and policies were explained and entered into quite extensively. In this connection it was announced that the Secretary-Treasurer had been instructed to conduct a ninety-day campaign for the purpose of securing five thousand charter members from the ethical dental profession, stating that we desired to do this before beginning an active campaign to secure members from among the laity and other professions. It was also stated that, immediately following the ninety-day period for securing charter members, many of the most prominent and successful workers in philanthropic and uplift organizations would be placed in the field on salary, for the purpose of securing membership and funds which would enable the Association to carry out its policies in educating the public to know and understand the value of Mouth Hygiene, and to organize the people in the various localities for the purpose of raising funds to establish and maintain suitable dentariums or dental hospitals to care for the worthy poor throughout the country.

At the time this article is being written a little more than half of the ninety-day period is past, but the support and coöperation received as the result of our campaign for membership from the dental profession has been such that the Board of Governors felt justified in closing contracts which secured the services of those people whom they believe would increase the working efficiency of the Association to a very marked degree.

First, arrangements had been made for the Secretary-Treasurer to devote one-half of his time to the up-building of the organization. One of the most important steps that has been taken in the history of the Association to-day in the direction of increasing its efficiency has been the engaging of the services of Francis R. Morison, of Cleveland, as

Director of Publicity. Mr. Morison is a publicity expert of some twenty years' experience in just those fields that will be of the greatest value to the Association.

Mr. Morison has in his employ twenty people, all of whom are experts in their particular line of publicity.

Mr. Morison's acceptance of publicity directorship places at the disposal of the Association a corps of experts which the Association could not hope to assemble without spending a great deal of time and money in gathering available material.

The extent of the publicity work which will be directed by Mr. Morison and his corps of assistants will depend largely upon the support which the remainder of our campaign for charter membership received.

The Morison organization is prepared to do much or little in behalf of the Association in newspaper or magazine publicity as the Association may dictate. The Association has been beset by hundreds of appeals for suitable newspaper publicity matter which it could not supply. In securing Mr. Morison it makes it possible for our members to have at their disposal that kind of publicity material that will appeal to newspapers throughout the country.

One of the most important things that is of interest to Mouth Hygiene men of the country is that the Fourth International Congress on School Hygiene has arranged for a section devoted to the presentation of the various phases of Mouth Hygiene in their relation to School Hygiene in general.

A large amount of space has also been set aside for exhibit dealing with Mouth Hygiene propaganda in connection with the scientific exhibits which are being presented in connection with the general School Hygiene. The arrangements for the organization of the Mouth Hygiene Section and Exhibits has been placed in the hands of the Secretary-Treasurer of the National Mouth Hygiene Association and an extensive program in this line has practically been arranged.

Committees are being arranged in every state and large city in the Union for the purpose of securing state and city representation in connection with the exhibits. An effort is also being put forth to have the foreign countries who are dealing with Mouth Hygiene represented in connection with this exhibit.

Plans are also under way to secure the active coöperation of the Women's Clubs of America. Through Mrs. S. S. Crockett, Chairman of the Public Health Department of the General Federation of Women's Clubs, over seven thousand Women's Clubs throughout the United States will be invited to coöperate with the Congress on School Hygiene,

and the result will undoubtedly be of the greatest benefit both to the Congress and to the National Mouth Hygiene Association.

We earnestly solicit the coöperation and support of the dental profession in making a success of this exhibit.

The Fourth International Congress on School Hygiene affords the best opportunity that has ever been offered to the dental profession to place Mouth Hygiene before the public in its true relation to School Hygiene in general.

At this meeting will be assembled the largest number of people that have ever gathered in this country for the purpose of considering those questions which deal with School Hygiene. Not only the leading educators and school officials of this country, but of the world, will be assembled on this occasion. This Congress should be supported by every individual who has interest in this welfare of the public school children of this country.

800 Schofield Building.

Editor Dental Digest:

In answer to question by L. M. C. in the April Digest, "How would you remove a broken broach forced through the apex of the root?" I would first wind absorbent wool about a smooth broach and pump sulphuric acid up in the canal, then use a very fine copper wire to work the acid about the broach. This will soften the cementum and probably loosen the instrument. Magnetize a smooth broach; this is done by having the broach polished and rubbing one way only, say toward the point, with one pole of a magnet. I use a common toy magnet for this purpose. Pass the magnetized broach to the end of the canal and the broken broach will be easily withdrawn.

If there is danger of forcing the sulphuric acid through the apex, then one had better use hydrochloric acid; while it does not soften the dentine or cementum as rapidly as the sulphuric, yet it does not have the corrosive effect on the soft tissues. To avoid irritating the tissues about the apex, after working up the acid a few moments neutralize it by pumping up a strong solution of bicarbonate of soda. By continuously working the acid, then the soda, the broken broach can usually be removed in a few minutes. I have removed not only broken broaches, but also points of Gates-Glidden drills that have been broken off in the apex of roots of molars as well as those of the anterior teeth.

Use absorbent wool, because sulphuric acid does not affect the wool, but does dissolve the cotton. M. A. G.

THE PRINCIPLES AND PRACTICE OF TOOTH EXTRACTION

By William J. Lederer, D.D.S., New York City

Second Paper

THE EXAMINATION OF THE PATIENT

The examination of the patient should begin the moment he enters the office, as many objective symptoms, valuable to the operator, can be elicited by careful observation.

Common sense will forbid a long painful session with a nervously agitated subject, the danger from shock being greater here than in the case of a robust individual. A strong person will withstand the extraction of a number of teeth without an anæsthetic, while a delicate patient may not bear a superficial scaling. A stout asthmatic is as unfit for a long session as a neurasthenic, whose confidence can only be gained by short sittings and the least painful methods. A heart lesion can frequently be noted by the congested appearance of the mucous membrane, club-shaped fingers, venosity of the nails, indicating an obstructed circulation. Extreme pallor may indicate anæmia or a weak, inefficient heart. Tuberculosis is often written upon a patient's face, and if pulmonary, the breathing will be the tell-tale. The respiration should be noted, a patient who is coughing is a poor subject for anæsthesia. The diabetic can often be recognized by the odor of his breath. The short jerky movements and snappy speech of the neurotic are easily differentiated from the slow motions of the plethoric. By carefully observing a swollen face one can often tell the offending tooth; a necrosis can frequently be detected by its odor.

The different types of physical make-up will not obviate a necessary operation but will modify our methods in some cases. An hysterical patient is better fit for a general than for a local anæsthetic. A keen diagnostician should always use all his senses, be he a physician, a surgeon or a dentist. Everything should be noted about our patients, their appearance, walk, mannerisms, speech, motions, every little detail; this is important in surgical practice, as surgical shock plays a decided rôle in the ultimate success and may prove an important factor in the extraction of teeth, especially as some extractions are severe surgical procedures.

This close observation of the patient enables the dentist to better appreciate the physical state of his charge, to co-operate with the physician, if necessary, and to better judge the use of anæsthetics.

It is wrong to make up your mind to examine a single tooth. First study the mouth as a whole; note all the teeth and the articulation. Examine the mucous membrane, as to color and the presence of any lesion upon the lips, the cheeks or tongue. Be on the lookout for any so-called "fever sores." Make it your business to become acquainted with a typical chancre. Look behind the third molar and take notice of the pharynx and the tonsils, study the character of the alveolar process and then lastly examine the tooth to be extracted.

If there is swelling or suppuration present examine the adjacent glands.

Fig. 1.—Examining the submaxillary and sublingual glands.

Avoid placing the fingers into the patient's mouth as much as possible; it is pleasanter for the patient and better protection for the operator to use retractors (Fig. 2) or wooden tongue depressors (Fig. 3). These are the cleanest, as they are cheap enough to discard after use.

If a swelling is present, always examine the contour of the jaws, by standing behind the patient and passing the fingers along the border of the jaw from the symphysis toward the angle and then upward toward the temporo-maxillary joint (Fig. 4).

This enables the operator to compare the two halves of the jaw and also determine the nature of the swelling; whether it is a bony tumor or œdema of the soft parts and whether or not there is fluctuation present.

If pus is suspected the mere extraction of the tooth may not give sufficient drainage and the knife will be required.

The fever thermometer and the frequency of the pulse will help to give the operator an idea to what extent the organism is taxed in fighting an infection. If septic material is absorbed, the patient's face assumes a grayish pasty appearance and he usually complains of having had chills. The extraction of the guilty tooth is then only part of the treatment, and besides the establishment of thorough drainage, the elimination of septic material must be accomplished by means of cathartics and the free imbibing of water.

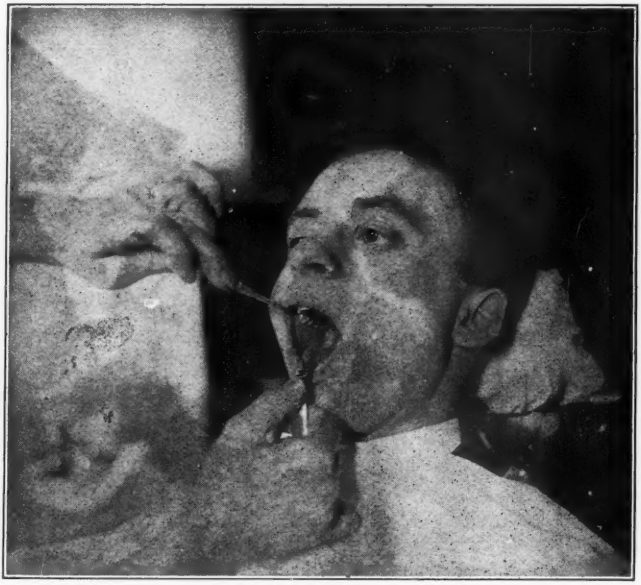


Fig. 2.—Examination of the mouth with retractors.

Before operating, the patient's previous history as to hemorrhage should be elicited to bring out the possible presence of hemophilia.

If a number of teeth or roots are to be extracted, it is always best to first make a chart of these, to be certain that nothing is overlooked or forgotten.

PREPARATION OF THE PATIENT

The successful outcome of any operation depends to a large extent upon the physical and mental state of the patient. No operation fills patients with more apprehension than the extraction of teeth. One reason for this is the fact that the patient is not able to see what is going on. The greater the fear felt by the patient the greater the shock to the

nervous system. The extent of shock attending dental operations is very much underrated and is only visible to the careful observer. The sudden blanching of the patient, the frequent and thready pulse, muscular spasms and vomiting are all symptoms of profound shock. Many patients are sent home from the dental office, who are really not fit to leave it. A good deal can be done to alleviate shock.

The patient should be in a comfortable semi-reclining position, tight clothing should be loosened, whether an anæsthetic is used or not, the head should be well supported and comfortable so that the muscles of the

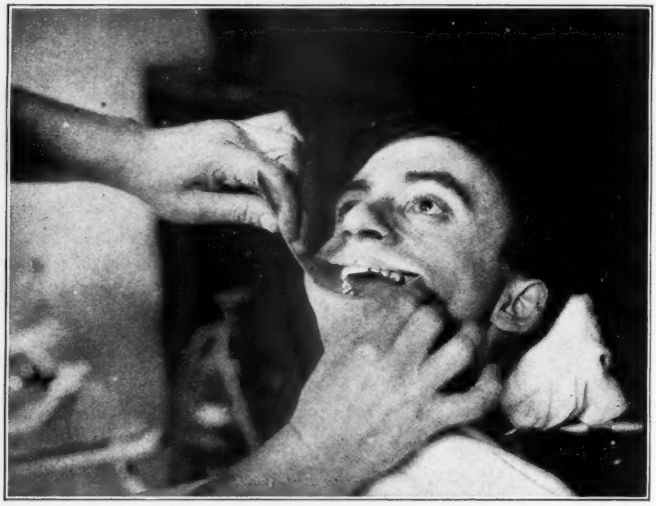


Fig. 3.—Examination of the mouth with retractors.

neck are not strained. The attendant should always direct the patient to the toilet, as involuntary micturition is not only very embarrassing, but may prove harmful to the patient, particularly in cold weather, for sudden chilling of the pelvis as the result of wet clothing may be the cause of severe illness. Many patients are so agitated as to become hysterical. They tremble and their muscles twitch. This type can be greatly benefited by the administration of sedatives, in the shape of bromides or valerian half an hour before operating. In extreme cases opiates will be of great benefit.

The latter should, of course, only be resorted to in extreme cases.

There should be as little preparation as possible while the patient is in the room; everything should be ready when the patient enters the chair.

To prepare the mouth for any operation it would be wise to have the patient carefully brush the teeth and use an antiseptic wash, but this will not be carried out even under ideal conditions. The writer applies the official Tr. Iodine full strength to the tooth and surrounding structures before applying the forceps. It is true, the buccal tissues cannot be sterilized, and they are not as susceptible to infection as

Fig. 4.—Examining the contour of the lower jaw.

other structures, but we must remember that by extracting we create an open wound, which may become an avenue for infection.

Indications for Tooth Extraction

1. Teeth resisting medicinal or surgical treatment.
2. Teeth causing infection, where the septic focus must be removed hastily.
3. Teeth which have lost their function.
   a. Teeth which interfere with proper articulation.
   b. Teeth which cannot be restored by fillings, inlays or crowns.
   c. Teeth which interfere with the introduction of bridges or dentures.
4. Teeth which are impacted and are the source of trouble.
5. Supernumerary teeth.
6. Teeth which erupt before or shortly after birth.

7. Temporary teeth which are retained beyond their proper time of exfoliation.
8. Single teeth in the upper jaw.

Malposed teeth should never be extracted for the correction of a deformity, unless an orthodontist has been consulted; even if the patient expresses such a desire.

Broken down temporary teeth should not be extracted, unless the seat of infection and beyond treatment. It is often advisable to retain temporary roots in position until the permanent teeth are "due," even if they cannot be filled properly; of course the fact must be borne in mind that such roots are not absorbed.

Too much stress cannot be laid upon these "extraction don'ts," as many irregularities of the permanent teeth are the result of the untimely removal of their temporary predecessors.

Once it has been decided upon that a tooth be extracted, the operator should carefully examine the diseased organ and note its surroundings, note the thickness of the alveolar walls, the possible direction of the roots, the degree of attachment, the position of the neighboring teeth. Note whether or not the offending organ is filled and how. If there is a cotton dressing in the tooth remove same to note whether or not the pulp chamber is open, or perforated, also if the tooth is split; a fact which may escape notice during a casual examination.

A root minus the crown and gingival border should be carefully examined, and it should be noted if the gum tissues cover or grow into the same. Such growths should be removed before extracting. The resulting hemorrhage can be controlled by Tr. Iodine or Trichloracetic acid. The consistency of the root, whether it is soft and mushy or hard, should be noted. Most failures in extracting are due to lack of thorough examination before applying the forceps.

Instruments

One of the errors committed by many young practitioners is the purchasing of too many forceps; many a pair of these after an idle life in the cabinet finds a more active sphere in the laboratory loosening flask bolts or doing some other "non-surgical duty."

The writer uses the following forceps made by the S. S. White Dental Mfg. Co.:

For all upper molars (on both sides) No. 10. Fig. 5, No. 1.

For all other teeth in the upper jaw, No. 32. Fig. 5, No. 2.

For narrow, slender roots, No. 65. Fig. 5, No. 3.

For all lower molars (both sides), No. 15. Fig. 5, No. 4.

For all other teeth in the lower jaw, No. 85. Fig. 5, No. 5.

For all lower molars in children, No. 101. Fig. 5, No. 6.

For roots in both upper and lower jaws, No. 63. Fig. 5, No. 7.

The roots forceps devised by Prof. Cryer, Nos. 150 and 151, Fig. 5, Nos. 8 and 9, prove very useful; No. 150 originally designed for upper roots frequently is the instrument of choice for the removal of third molars in either jaw. Besides forceps the following instruments are required:

A pair of excising forceps, Fig. 5, No. 10.

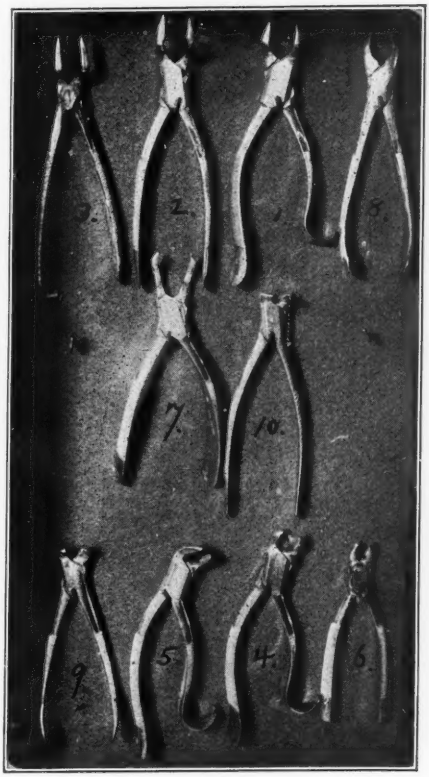


Fig. 5.—Forceps.

Mouth mirror, explorers, probes.

A good scalpel to incise the gum.

Shears, both straight and curved to divide soft tissues.

A syringe.

Mouth props of metal, rubber, or wood. A large variety can easily

be cast in lead or tin. Each prop is attached to a piece of silk or string and tied to a second prop, so that it can be easily withdrawn if it should become loosened.

A mouth gag or oral screw should always be handy to be able to open the patient's mouth while under an anæsthetic.

The Denhart pattern of mouth gag is very useful and is very handy to help keep the mouths of children open, if the little patients are inclined to resist.

Children are apt to give the dentist a good deal of trouble. After coaxing, begging, and promising the fulfilment of their most coveted wishes or by threat or force, the little sufferer is made to sit in the operating chair. The doctor by coaxing locates the guilty organ and takes up his forceps to extract, but—quick as a flash the little fellow shuts his mouth and refuses to part his lips. This is a most trying moment to both operator and parents. In these instances the Denhart gag proves invaluable. By closing the little patient's nostrils air is cut off and he is forced to open his mouth a bit. If the Denhart gag is now quickly brought between the teeth, pressure upon the handles of the instrument will pry the jaws apart, and nolens volens the forceps can be applied. Great care must be exercised that the instrument is not opened too wide for children and that the soft parts of the mouth are not injured; the instrument should never be opened unless it is placed between the upper and lower teeth.

A pair of pharyngeal forceps to remove teeth which may enter the pharynx.

A pair of tongue forceps to grasp the tongue if it should drop back.

Sharp chisels for cutting bone.

A mallet.

Elevators and dental screws, which may prove very valuable in removing small roots at times.

A pair of anatomical forceps to grasp small portions of gum tissue.

A pair of bone forceps (rongeur) for cutting off sharp bone projections.

A very necessary requisite is a good headlight; the ample illumination of the oral cavity is essential, and at times proves very difficult. (Fig. 6.)

A cautery operated by electricity or benzine.

The following drugs should always be handy:

Hypodermic syringe with strychnine, morphine, and morphine combined with atropine.

Whiskey.

Aromatic spirits of ammonia.

Amyl nitrite in globules (glass pearls, which are broken in a napkin and their contents inhaled).

Bromides (Adalin).

Tr. Valerian (Valyl globules).

Tr. Iodine for swabbing out sockets or sterilization.

Thiersch solution and Saline solution for washing out sockets or wounds.

Iodoform gauze strips, one-half inch and one inch wide, for packing.

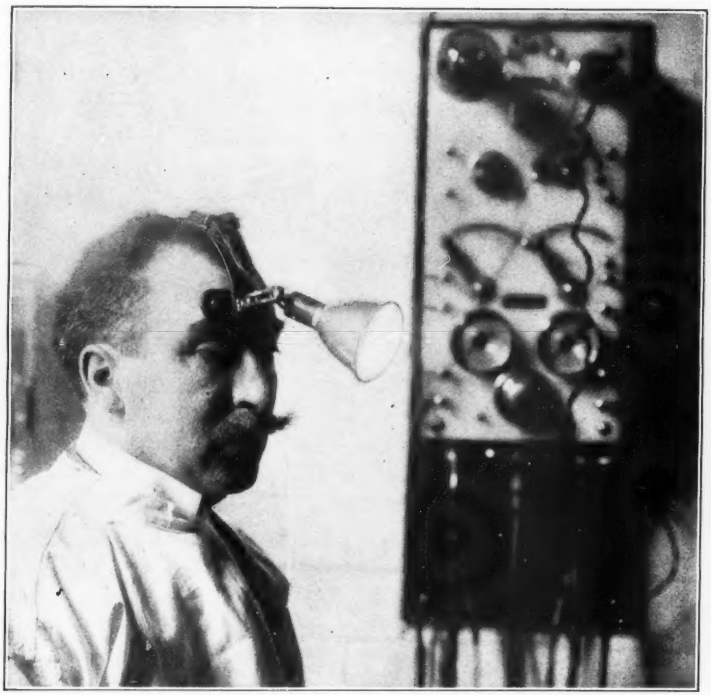


Fig. 6.—Headlight.

Adrenalin chloride.

A tube of Ethyl chloride for spraying.

150 East 74th Street.

(*This article is expected to be continued in the August number.*)

DISEASES OF THE GUMS*

By Robin Adair, M.D., D.D.S.

Chair Oral Prophylaxis and Pyorrhea, Southern Dental College, Atlanta, Ga.

Alfalfa is the common hay for stock in our Western States. A physician of Hamilton, Ohio, reports in the *Medical Summary* a wonderful discovery in the use of this grass. After the medical fraternity had given up a patient to waste away and die, he was called to prescribe for her. His treatment was a tincture of alfalfa grass, with a dosage of ten drops in a tablespoonful of water three times a day. The patient took the medicine for three months and increased in weight from 99 to 183 pounds and enjoys the best of health.

In commenting on this case, the editorial column of *Ellingswood's Therapeutist* said: "Observations in alfalfa should be promptly reported. It taxes our credulity to be willing to credit a gain of 84 pounds in three months in an eighteen-year-old girl to ten drops of alfalfa three times a day."

From Guerini, in "History of Dentistry," I find this story: "In 1593 a rumor in Germany was spread of a great marvel that had appeared in Silesia." A golden tooth had erupted in the mouth of a child seven years of age.

In our day news of such kind would be immediately qualified as an imposture, but three centuries ago the most marvelous and unlikely things were easily believed, even by the learned.

While interested, I see that you are questioning me as to what these reports have to do with my subject, "Diseases of the Gums." In every dental journal just as marvelous claims in cures for pyorrhea are reported or advertised. And credence is given these as were the alfalfa fad or the golden tooth, and the general practitioner of dentistry, wishing to relieve his patients of diseased gums, soon finds that "all is not gold that glitters," but that "all grass that grows is green"; thus I realize that you will be naturally shy of what I am about to describe.

We have also the so-called specialists in pyorrhea work, like myself, who appear before societies and further bewilder the suspicious by technical papers of special instrumentation, which is supposed to be possible only to the selected few. This has had the good effect of establishing this specialty in our land, and valuable teeth are saved that otherwise would be lost; but your attention is invited to the

* Read at meeting of Piedmont Dental Society, Greenville, South Carolina.

thousands of teeth lost in nearly every dental office because some simple method of treating these cases was not used by the general practitioner. In my twelve years of practice I have been guilty of most of the errors which I have spoken of, but, on the other hand, I have continued in paper, lecture, and by personal conversation to urge dentists to look for and to treat diseases of the gums, and then, if they fail, why, we specialists should be given a chance before the teeth are condemned. In other words, the patient should not have to pay for expert service at the rate of from $10 to $25 per hour when the ordinary dentist can render the same service at his usual fees, and I hope, before this meeting is over, to show you how you can do it if you will let me show you, and then try it for yourself.

For the purpose of this paper we will omit all discussions of whether diseased gums should be called Riggs' Disease, Infectious Alveolitis, Calcic Inflammation, Pyorrhea Alveolaris, or a hundred other names.

We will omit all discussions as to whether these diseases are caused by excessive lime salts, heredity, meat eating, nervous exhaustion, uric acid states, or the local causes of catarrhal states, germs, irregular teeth, pocket disease, serumal calculus, or uncleanliness.

We do know that any diseased gums, no matter what the cause, are greatly benefited if the mouth is properly cleaned and treated.

For instrumentation, you need not buy one tool, for one-half the so-called sets are more of a drawback, unless we know the manner in which the inventor intended the curves to be used. In taking up this work, you may begin with the same instruments you have for removing decay and cleaning teeth. You are familiar with these and know how to use them. Some of these spoons have not yet been improved upon for this work. As you progress in work and experience with these operations, you will learn to select the proper instruments for advanced cases.

The difficulty we are having is with a treatment or medication. Unlike any other part of the body, we cannot bandage or keep in our remedy. Your medicine is washed off immediately with the constantly flowing saliva. In addition to this, you cannot clean up your field of operation, for your gum is an ideal culture tube—the human mouth, with stagnant saliva, decayed teeth, decomposed food all around. Hitherto the antiseptics we have been using have proved a failure, for if we had them strong enough to destroy bacteria, the membrane of the mouth would be either kept in a raw state of inflammation or destroyed.

The object of this paper is to acquaint you with a treatment which

will come nearer filling the sought-for requirements than anything yet found. Some thirty years ago, my father, Dr. R. B. Adair, got up a combination of glycerin, tannin, chlorate of potash, iodine, and rose water. This he made himself and has been most successful in his treatments, but the combination was difficult to make and was not stable. He gave it to the profession, but few dentists made a success of it.

The writer, being a graduate chemist, has been working for several years on this combination and only last year succeeded in bringing about this most peculiar combination, which he placed upon the market at the retail price just above the cost of making. This was done for the simple reason that it would be impossible to write ℞ for this preparation, and when this was done, we never found a druggist who would get it just right.

The composition I gladly give you. As the method of combination is a strictly ethical secret just now, I hold it for the present, but I have arranged for the supply houses to give it to you cheaper than you could make a small batch.

This was first shown at the meeting of the National at Washington, with the one desire to find out what it was and what it formed or did. I surely do not know, and, strange to say, no one has yet offered a reasonable answer to my query, although the most prominent men of the profession are using the combination.

These preparations are known as A Pyorrhea Treatment, No. 1 and No. 2. The name "Treatment" is a misnomer; it should be "Dressing," and you can use any other treatment in connection with it.

Simple cases of so-called gingivitis will only need three or four applications; the severity of the pathological condition will determine the number of applications.

The "Treatment" or "Dressing" does not stain a clean tooth (really bleaches them), but it does stain every bit of foreign matter on the teeth; thus it is a good idea to use several treatments before the scaling operations, as this staining process shows up the tartar and other accumulations. This "Dressing" furnishes the strongest antiseptic which can be used in the mouth and forms an astringent membrane which seals and protects the gums from infection. The formation of this membrane is similar in appearance to that of Surgeon's Collodion or New Skin. It holds for twenty-four to forty-eight hours and gives the longest period of mouth medication known.

It may turn out like the alfalfa fat or the golden tooth, yet I believe that it will aid you to cure many inflamed gums that are a constant menace to your patients.

I have performed many experiments outside of the mouth under all conditions, and have been unable to form this peculiar combination except in the oral cavity, and not then until the saliva comes in contact with the application.

The No. 1 is placed on the dried section of the gums, then the No. 2 is placed over it; still no combination takes place. Let the patient spit, and the moment the saliva comes in contact with the application a membrane is formed. Outside the mouth, do the same thing and put on saliva and it won't form.

Why?

Under twenty-four hours it is impossible to remove formation from the gums, then it turns loose and comes off in small pieces, looking like rubber dam.

Why?

One of the greatest helps I get from this preparation is in its use for cervical fillings. You remember those cases when, just as you want to insert filling, either a drop of blood or exudate flowed into the cavity. Or, again, when you want to cement a crown which goes below gum margin, how hard it is to keep it dry. Apply this preparation prior to operation and be assured there will be no trouble from this source, for the gum is sealed to the tooth now with a membrane so astringent that it can be likened to a drawstring in a tobacco sack.

In cases of hemorrhage from tooth extraction, when everything else fails, use No. 2 on pledget of cotton placed in the cavity. Never saw it fail yet. Why?

Thus we use it in regular operations as well as treatment in the care of diseased gums. Whether this preparation is any use to you or not, my plea is to find one that will give you results, for our only hope to eradicate the great loss of teeth from diseased gums is for the dentist to look for and treat these conditions in their incipiency.

319 Grant Building.

Editor DENTAL DIGEST:

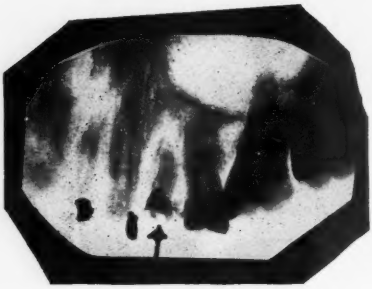
HAD a patient a short time ago who wanted some dentures made, using a metal base. During our talk regarding what metal we should use, she said a dentist had told her that Russian Iron was the best metal for such cases, and she is quite determined to have this metal. Personally I never heard of such a metal being used in dentistry, and if you can enlighten me any I will appreciate it very much.

SIGOURNEY.

A PARTIAL EXTRACTION FOR RESTORATION

By F. K. Ream, M.D., D.S., New York

Mr. S., aged forty-eight, referred by a dentist, with a right superior first bicuspid too short to be crowned, owing to frequent former efforts at restoration. I was requested to partly extract or lower this tooth to make it possible to crown same. An exposure with X-ray showed the tooth was not bifurcated. It was very solid and firm.



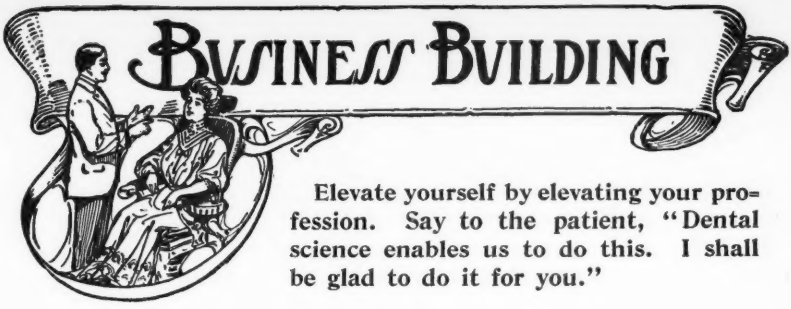
No. 1.

No. 2.

I removed a little process, placing a rose head bur on the labial and lingual side of the root, about two-thirds its length, enough to permit grasping root without fracturing it. I then employed a narrow beaked root forcep and pulled down the root about a quarter of an inch, as shown in skiagram number one. This was done, of course, very carefully with marked absence of traumatism, under local anæsthesia acestoria. Still the root showed firmness. I let it alone for about three months. It was then very firm and the patient was returned to his dentist for a crown. The second skiagram was made, showing the root then surrounded with osseous tissue. A year later I made another skiagram showing complete restoration and firmness.

This brings up in my mind a new field in well selected cases of the retention of valuable roots, especially superior cuspids. It is needless to say that all treatments and root fillings should be completed before undertaking this operation.

Æolian Hall, 27 West 42d St.



Elevate yourself by elevating your profession. Say to the patient, "Dental science enables us to do this. I shall be glad to do it for you."

INVESTING SAVINGS FOR PROFITS

GEORGE WOOD CLAPP, D.D.S., NEW YORK

PROBABLY none of us saves up a little money without facing the problem of what to do with it against the day of need, and to make it earn profits. There are different ways of investing savings, and these ways appeal to men with different force.

One of my friends is very clever in real estate investments, as a side line. He invests in it from time to time and later sells at a profit. I thought that what was good for him ought to be good for me, so I bought a little. But I found that for me it was a very different proposition. He likes to keep posted on the shifting conditions which determine the value of real estate. His business brings him daily into contact with the real estate market. But for me real estate is a nuisance. I am shut up all day in an office. I never see real estate men. When I get home at night I am too tired to study real estate values. And so a couple of really good residence plots are lying out in the sun, eating themselves up with taxes. And while they were bought at favorable prices and the value is in them, I can't find a buyer.

It is one of the drawbacks of real estate that you cannot sell it quickly, even if you are willing to take less than its fair market value. And in New York you cannot borrow money on real estate until you have had the title searched and piled up other expenses which double the legitimate rate of interest. So for me and others of my type, real estate is a white elephant.

Practically the only form of investment that now appeals to me is the purchase of securities of known value. This takes one to the stock market. And while it may be treading on dangerous ground, I shall tell you here some of the fundamentals which I have been learning from the bankers concerning intelligent buying.

I wish, however, to definitely clear myself of the charge of advising anybody either to purchase anything or to refrain from purchasing anything at any price or on any terms. I do not want you to be able

to say that I offered you advice which resulted in a loss. But because many of you are like myself, trying to make your savings profitable, I want to tell you what intelligent bankers have told me. I may say that I am using this information as the basis of my own actions.

WELL KNOWN SECURITIES

Securities may be divided into several classes, but it seems to me that for dentists the first division should be into what may be called "well known" securities and "unknown" securities. By well known securities I mean those that are listed on what are called "The Big Exchanges." These include the prominent railroad stocks and many industrials. The mere fact that a stock is listed on the exchange is no proof that it is a desirable stock from my point of view. But among the stocks so listed will be found many desirable stocks. And such stocks have the further advantage (and from my experience in real estate it is a big one) that there is always a market for them, and that they can be sold for cash or borrowed on at an hour's notice. They pay good dividends. They can be kept in the safe, where they are practically free from taxation. And if they have been intelligently bought, they can often be sold at a profit.

"Unknown securities" may be very desirable if you have special knowledge concerning them. For instance, every dentist has special knowledge concerning the dental business. He knows very well the names of many manufacturers of dental goods who have been long in business whose products are reliable and whose careers have been honorable. If he is fortunate enough to be able to secure stock in such a firm on a knowledge as to its earning power, he may do well to invest a part of his savings in this way. If I had been one of the fortunate few who invested in the securities of the publishers of this magazine a number of years ago, I should be well content now. But it seems to me unwise for a dentist to tie up all his resources in "unknown securities" however favorably he may think of them. The investment in securities which have a wide market should always be larger, which the banks will accept as collateral for loans, and which can be sold at need.

THE PROFIT FROM SECURITIES

It is a failing among us as dentists that we seem to despise the returns which may be expected from staple securities, and look always for returns which cannot be had, accompanied by safety of the principal. That is because we use poor business methods in our offices.

A dentist once said to me, "Why, I use fifty cents worth of gold and put in a filling for which I get $5. That's $4.50 profit. Why can't I buy stocks that will pay that way too?" And then he told me of some wildcat proposition on which he was to net 4 per cent a month. I am sure he has lost the sum invested.

The bankers tell me that 5 per cent per annum is the limit of return which I may expect with safety of principal. This return can sometimes be obtained by buying good bonds at a time when the price of bonds is low. Certain bonds are about as sure as any investment can be, but there are bonds and bonds, and they can be safely bought only on the advice of a banker who knows bonds, just as orthodontia can safely be undertaken only on the advice of some one who understands orthodontia. Thus in November, 1907, investment bonds of known worth could be bought to yield over 5 per cent. By February, 1909, the purchase prices of the same bonds had advanced so that the interest yield was only 4.11 per cent. The prices have now declined so that the yield averages 4.75 per cent, with certain bonds bringing over 5 per cent. Bankers advise the purchase of good bonds now, as sources of permanent income.

Stocks differ from most bonds in nature. A bond is a certificate that you have loaned a certain amount of money to the business and that the business agrees to pay you back that sum at a certain time, with certain interest in the meantime. A share of stock is a certificate that you have bought a share in the ownership of that business, that you assume your share of the risks, and that you will take your share of the profits, big or little.

Stocks are attractive to many because they offer opportunities for greater profits than good bonds, both as to the prices for buying and selling and rate of interest. Thus a staple bond paying 5 per cent interest will sell at par or more, while a stock paying 6 per cent or more may often be bought at par or sometimes a little below. Moreover, the price of the stock may rise and fall more rapidly than that of the bond. And if it were bought low. there may be opportunities to sell it high, and repeat the operation every few years. As soon as I have taken up one other point about buying, I'll come back to this subject.

MARGIN BUYING DANGEROUS

Buying on margin means that you pay the broker a small part of the purchase price of the stock or bond, that he borrows the balance necessary to buy the stocks from the bank, and holds the stock as security. If the price declines, he asks you to put up more money to

protect your holdings. If you do so often enough on demand, you will be safe. But you must have the money at once. To-morrow or next day, or in a few hours will not do. By that time the price may have declined further. And if your additional money is not forthcoming at once, the broker is compelled to sell out your stock to protect himself. You lose what you put in.

If there is one place in all the world where "the best laid plans of mice and men gang aft a-gley" it is in buying on margin. The history of security buying is strewn with wrecks of men who have bought on a margin of, say 10 points, and who have been unable to meet the unceasing calls of their brokers for more money. Every time you see a record of a deep fall in the prices of stocks, you may be pretty sure that a lot of men have been ruined by this sort of buying.

It ruins men other ways than financially. I can think of few more upsetting things than to be called to the 'phone during a delicate operation and hear your broker say "Good afternoon Dr. A—, the market is off a little and I'd be glad if you would send down a thousand dollars." If you haven't that thousand and other thousands in the bank, and if you don't know where to get it in the course of the next fifteen minutes, you will return to your chair utterly unfitted to continue your operation. For few of us are such good professional men that when we face the loss of our savings we can put business out of our mind, and consider the "poetry of the operation."

Margin buying is probably responsible for more lying, stealing and suicides, than any other one cause operating among us to-day. And while I will not advise you to buy anything, I do not hesitate to advise you with all my force, not to buy on margin.

There is a form of buying which differs somewhat from buying on margin which can be put into operation by any dentist who wishes to develop business and financial ability. Let him arrange with his bank for the purchase of a certain security which the bank can approve, and is willing to accept as collateral. Let the dentist learn the previous range of prices of this security, and when the prices are low enough, let him pay the bank $\frac{1}{3}$ or $\frac{1}{2}$ of the whole purchase price, have the bank carry the stock, and pay it out with his savings as may be agreed on. The dividends on staple stocks will defray the interest charges at the bank and the rise in price will make the whole operation profitable.

SEASONABLE BUYING

One of the greatest surprises I encountered in studying this question of investments, is that there are seasons when it is wise to buy

securities, and seasons when it is very unwise to buy. I formerly thought that the time to buy was when one had the money. But I soon learned that the buying on such a basis was very shortsighted, and that it might pay to wait a year or two before buying, letting the money lie in the bank in the meantime.

The fact is that if the prices of securities be examined for a number of years back, they will be found to act very much like the proverbial pendulum. They swing from very high to very low, the length of swing averaging two or three years. Thus in the latter part of 1903 the average price of 32 good stocks was $66 per share. The prices "see-sawed" up and down, but rose gradually until in January, 1906, they averaged $121 per share, or nearly double the price during the panic of 1903. By December, 1907, they were again down to an average of $68 per share. In August of 1909, they had again advanced to $116. In July of 1910 they dropped to $90. Since that time they have gone as high as $110, and are now down to about $92, with further declines not unlikely.

It is evident that the man who bought stocks in January, 1906, just because he had the money then, would have lost nearly 50 per cent on his investment during the next two years. If he had bought on margin, he would have been numbered among the thousands of ruined ones, and perhaps among the embezzlers or the suicides. But the man who saved his money from 1906 to 1907, meantime getting only 3½ per cent from the savings bank, could have invested in 1907 and sold in 1909 at a profit of at least 40 per cent and that without buying at the bottom or selling at the top. It seems evident then that the first two elements of successful buying for us dentists, are to know what securities should attract us when the time for buying comes, and to know enough of the price ranges of these securities in the past to know when they are selling at low prices for the values.

SOME SECURITIES WORTH WATCHING

It would be the height of folly for me to attempt to present anything like an intelligent résumé of the opportunities for buying, or of the securities which can be bought to advantage. As I said in the beginning, I have studied this question only from the point of view of investing my own savings as safely and profitably as possible. And I am writing this article because I feel peculiarly related to the many subscribers to this magazine who have followed the business suggestions it has made, and who are profiting thereby.

By the advice of competent bankers, I have given some little study

to several of the highest grade railroad stocks. I'd like to make a little more money than can be made in bonds. Then, too, the stocks can be bought in multiples of $100 while the bonds usually come in units of $1,000. I have chosen railroads because my capital is small, because the big railroad systems are pretty well managed, because the people must always use railroads, and because they will recover more quickly from depressions than many industrials, though some industrials are never affected by panics.

When the market began its downward swing several months ago, I asked the bankers for a list of stocks which one in my position could buy to advantage, and they sent me the names of the following stocks in the order of their desirability.

1. Pennsylvania R. R., 6%. Price in 1912 ranged from $120 to $126. Price June 14, 1913, $110.37.

2. Louisville & Nashville, 7%. Price in 1912 ranged from $139 to $170. Price June 14, 1913, $130.25.

3. Chicago & Northwestern Common, 7%. Price in 1912 ranged from $130 to $145. Price June 14, 1913, $127.

4. Pittsburgh, Cincinnati, Chicago & St. Louis Preferred, 5%. Price in 1912 ranged from $98.50 to $111. Price June 14, 1913, $93.

5. Chicago, Milwaukee & St. Paul Preferred, 7%. Price ranged in 1912 from $139 to $146. Price June 14, 1913, $134.50.

6. Great Northern Railway Co. Preferred, 7%. Price ranged in 1912 from $126 to $143.75. Price June 14, 1913, $122.50.

7. Norfolk & Western Preferred, 5%. Price ranged in 1912 from $88 to $92. Price June 14, 1913, $80 to $90 with no sales.

8. Illinois Central R. R. Co., 7%. Price ranged in 1912 from $120 to $141. Price June 14, 1913, $112.50.

9. Delaware & Hudson, 9%. Price ranged in 1912 from $162 to $175. Price June 14, 1913, $150.

10. Northern Pacific Ry. Co., 7%. Price ranged in 1912 from $115.37 to $131. Price June 14, 1913, $107.37.

11. New York Central & Hudson R. R. Co. Price ranged in 1912 from $106 to $121. Price June 14, 1913, $100.25.

12. Atchison, Topeka & Santa Fe Preferred, 5%. Price ranged in 1912 from $103.25 to $111. Price June 14, 1913, $96.62.

13. Southern Pacific Co., 6%. Price ranged in 1912 from $103.50 to $115.50. Price June 14, 1913, $95.75.

14. Union Pacific Common, 10 per cent. Price ranged in 1912 from $150.75 to $176. Price June 14, 1913, $147.

15. Atlantic Coast Line Common, 5%. Price ranged in 1912 from $130.75 to $148. Price June 14, 1913, $119.

TWO MORE ANSWERS TO "SOME PERTINENT QUERIES"

The following questions were asked by Dr. W. M. Thomas in the December, 1912, DIGEST, and in order that our readers may fully understand the answers, those questions have been reproduced.—EDITOR.

1. Tell us, were the average poor men started or did father foot the bills?
2. Did they start right off from college with top-notch prices or gradually raise them?
3. Are they mostly in large cities or suburbs, and if in cities, are they mostly in dentists' office buildings, flats, or private houses; and are they in business or residential neighborhoods?
4. Do most of them do operating alone; and if not, what part of their work does the assistant do?
5. How long do they give credit to their patients, and do they put their accounts in the hands of collection companies for collection?
6. Are they general practitioners or specialists?
7. To what particular point do you attribute their great success over the average practitioner?
8. What is the average time they spend at their work per week?
9. What is the average age of this class of practitioner?

ANSWER NO. 1

The author of this reply is well known to the editor. He has made a notable success abroad and numbers prominent royal families among his patients. He has a beautiful home and a fine family. He is well qualified to write on this subject.—EDITOR.

W. M. THOMAS, D.D.S.

Dear Doctor: After reading your "pertinent queries," it seems that my turn has come to contribute something. I do so, however, with the strict understanding that my identity shall never be disclosed.

1. I started without a dollar, worked between five and six years as assistant, and managed during that time to save $2,000 and get a good wife, who proved to be one of my best assets.

2 and 3. We established in a German city. One-half our fortune, being invested in America, was never touched. We arranged with a furniture dealer to furnish our flat, one-half the price to be paid at once and the balance in one year, and the same was carried out with a dental dealer. We met both obligations promptly and also sent a snug sum home the first year for investment. The best rooms in our flat were reserved for the office and handsomely furnished. Only as years passed did we bring up the rest of the house to and beyond the standard of the office. But we never failed to send a goodly sum each year to America for investment. I began with good prices, having a minimum fee of M. 15 ($3.75), and have been compelled to raise them from time to time. Most of the dentists in my city were charging for cement and amalgam one-half my minimum fee, but I did many small

gold fillings for that same price. When possible I cleaned and examined at once and made an estimate for all the work found necessary. If the patient found the amount too much, I often, during the first years, did a few places with high-heat gutta percha without charge, explaining that in that way nothing could happen and that the places could be permanently filled later. This method enabled me to come within the patient's means without reducing my standard of price. Never in my career would my conscience permit me to overlook places in order to quote a price that the patient could pay. My office has always been in a residential part of the city.

4. For many years I have had an assistant and a laboratory man, but believe I have always been the hardest worker of them all. My work embraces all kinds of dental work. Accounts are rendered to a number of old families once a year on January 10th; to others, as soon as the work is finished. Slow payers get polite letters at intervals.

5. Only rarely have I sought legal assistance to collect, have never brought suit, and yet have very few unpaid bills. I have occasionally had to make sweeping reductions for people who had not been sufficiently educated to appreciate the difference between cleaning and pyorrhea treatment, but such experiences have taught me to do more educating.

6. I have always done all in my power to avoid pain and am said to have a light hand. I endeavor to make my approach as light and gentle as possible, but when I work I believe I put on as much power as anybody. I keep a good stock of new burs, which is constantly drawn upon when treating sensitive teeth.

7. I believe avoidance of pain has contributed largely to my success, but not less important has been *conscientiousness.* I have tried to make every piece of work the best I could do.

I have never feared losing a patient's confidence by doing a piece of work over, even many times, as has sometimes been necessary in inlay work. Under such circumstances I have bolstered the patient's feelings by saying that they are victims of my conscience, but that the work must be just right before I leave it. I can recall some such instances where my profit has been quite wiped out, but I have been able to enjoy refreshing slumber because I had done my duty.

8. I work about forty-eight hours per week.

9. I established at the age of twenty-seven years. Conditions abroad are not greatly different from what they are at home. People are perhaps more conservative, and therefore less willing to go to a new man. They are certainly very economical and are not willing to pay large fees except for superior work.

To succeed one should work at least five years in a first-class practice—ten years would be much better. If one cannot succeed to the practice, and has made the customary agreement not to establish as a competitor, he can go to another city and soon find a nucleus of patients because of the reputation established in the first practice.

An assistant in a practice abroad, having agreed never to become a competitor, is given the best patients of the practice without reserve, and in a few years comes to have practically as important a position in the practice as the owner, and therefore he gets a reputation, in a good practice, which extends to dozens of other cities, assuming, of course, that he is capable and pleases his patients.

American dentists abroad are getting very numerous, and many native practitioners are decidedly skillful, and it would be a fallacy for an American to believe that because of his nationality he can succeed without special effort. I have known too many who have not made good. With kindest regards,

Yours very sincerely, EUROPE.

ANSWER NO. 2

1. College fees and living expenses during study met partly by father, but mainly through a loan from a relative. Immediately after graduation, acted as assistant at $1,100 per year, until loan paid off, with interest at four per cent.

2. When free of debt, succeeded father in his dental practice, then returning about $1,250 gross per annum. Fees then were $1.25 for ordinary fillings, $2 for root-canal treatment and filling. Vulcanite plates, $1.25 per tooth. Fees gradually raised to double, and in some cases more than double the previous rates. Very few of the desirable class of patients lost thereby, but a few of those whose patronage dates from the foundation of the practice are now attended to at about the old rates. These are not now numerous.

3. In a good private house, with bright exterior and well-kept garden, in residential neighborhood. Population about 8,000, with competition right opposite. About half the population cannot afford dental treatment other than an occasional extraction.

4. All operating done personally. Appointment book usually filled one week in advance, save for one-half hour in morning and one in afternoon, which times are reserved for casual callers. Office girl cleans around between patients, shows them in and out, keeps books, makes out bills, and types letters. Rooms thoroughly cleaned out once a week. One laboratory man kept; average hours worked by him, forty-four per week, at twenty-five cents per hour.

5. Accounts sent out every three months, and losses from non-payment are small. Artificial dentures are spot cash. If an account remains unpaid for an unreasonably long period, a polite request for payment is written; if that has no effect, the account is sent to a lawyer, who collects on a commission basis. Unless the amount is large, it is then given up as hopeless, and not sued for. The shopper is unknown in England, outside the advertising practices.

6. General practitioner: the dental specialist in this country being non-existent.

7. Cleanliness in office and person. Avoidance of undesirable associates after office hours. Promptitude and punctuality. Using every means in one's power to insure that the work done for patients shall prove satisfactory to them, even though this entails a loss on an estimate. Last, and this item is very important, a helpful and tactful wife.

8. Average time at work per week, forty-four hours. No church, but golf or marine motoring on Saturday afternoons and on Sundays.

9. Age, thirty-six. In practice twelve years. Fees received in 1912, $7,500. The young graduate in England suffers sorely from the competition of unqualified dental quacks, but there are signs of legislation to protect him in the near future.

L. D. S.

And I have loved the Ocean! and my joy
Of youthful sports was on thy breast to be
Borne, like the bubbles, onward: from a boy
I wantoned with thy breakers.—*Byron.*

Lettres de Charley

A UN JEUNE CONFRÈRE

qui débute dans la carrière

(Translated from "La Province Dentaire" by Anthony H. Mainzer, New York.)

My Dear Young Friend:

What is keeping you from going away? I easily divine from the tone of your letter that a little rest is absolutely necessary for you, but pray, no half measures: it is not four days' rest you need but a fortnight's, or more, and under conditions which I shall presently lay down for you.

Unfortunately there comes a time when the young organism, however robust, refuses to perform its functions normally without a great expenditure of nervous force, which is a source of real danger for the future. The arguments you proffer to convince me that it is impossible for you to close your office at this time have no leg to stand on. You have now been located in Mont—— two years, you have kept me posted on your work, and from other sides I know that you are very busy. In two years you have only taken Sundays for rest, and yet you are surprised that you are tired, nervous, irritable, and do not sleep well in the bargain. It is all very well to tell me, "I have my duties, I have hardly paid for my outfit, I do not have my patients well in hand, what will *they say?*"

First of all, my dear Jack, even admitting that at Mont—— this is not, as here, the slack season, do not imagine that your patients are ignorant of the meaning of "vacation." Why, I see about me none but people who take vacations: bank employees, employees of large business houses, lawyers, judges, professors, and doctors. There! Several parents are to bring their children to you during vacation time. Well, the schools do not reopen until October, and here we are in the first days of August. Now then, you make your arrangements to leave on the 15th of this month to be back by September 1st. A simple

notice in the "Local Brevities" of your local newspaper, "Dr. Jack, dentist, will be absent from August 15th until September 1st" will be sufficient. This news will quickly go the rounds of your patients. This is not advertising but merely a polite attention. The first result of this notice will be that you will receive calls from several patients who always wait until the last moment before making up their minds. Well and good. Do not start anything complicated, make temporary repairs; for all long and painful work make an appointment for your return.

Your pleasure, as you leave on the appointed day, will be so much greater as you are assured in advance of a certain amount of work on your return. It is very possible, and even certain, that there will be calls during your absence, and that some callers will show their displeasure at not finding you at your office, but listen to what a rather long experience has taught me. The same lady who will seem so annoyed at not finding you, and who will tell your secretary or the person receiving her, "This is annoying, but after all, there is no other dentist in Mont—— but Dr. Jack," will come to your office smiling the first day in September, and ask you if you have had a good rest.

All of us, I do not say dentists, but us humans, have a perplexing tendency to ascribe to our duties much more importance than they really have. So you also, my dear Jack, do not be offended, imagine that the whole town will notice your absence. Not at all. The incident will pass entirely unnoticed. I would simply advise you as follows: Keep your office open, that is to say, have your laboratory man or a servant whom you trust present as usual. An explanation will have to be given of your absence, appointments made, and if need be, a broken apparatus mended. For any urgent treatment leave orders to send the patient to your friend, X—, but do not take a substitute, as you seem to have the intention of doing.

A substitute is like unto a two-edged blade. If he is skillful, a man of talent, and accomplished, who knows but what your patients will make comparisons which will not always be in your favor? If he is mediocre, he will do bad work, and you will suffer. And if, unfortunately, he should be dishonest, ten months would not be enough to find out and correct the frauds committed. Therefore no substitute!

Another good advice. Give strict orders to the person in charge during your holiday to take down the names of all persons who call, names and addresses, and if possible, particulars of their reasons for calling.

In order that you may be left undisturbed, once you are off, aside from the mail which must follow you, have a report sent you as to the

doings at the house every five or six days only, unless something extraordinary should happen.

Now then, we are agreed. This very day you make arrangements for leaving, come what may, on August 15th. Finish up the work in hand, but do not start anything complicated.

I believe I have amply convinced you that a good rest is absolutely necessary for you, for it is better to allow yourself two weeks of idleness than wait to have the doctor order two months.

And now, what is called taking a rest? It may seem strange to you that such a simple thing as rest should, nevertheless, be hard to define. For many it consists in getting into a 12 HP, after having carefully made out an itinerary, and setting out on our beautiful French roads pulling off, on an average, 250 to 400 kilometers a day. That it is pleasant I admit, that it is not within the reach of everyone is understood, but that it is resting—not on your life! Others take a route ticket and go off to make a circuit of 1,500 kilometers in Germany or Austria. Then there are the salt water baths, or Vichy, Aix. Unless severely suffering with dyspepsia or rheumatism, or, above all, very wise, life at these places is awfully tiring. It is nothing but late hours, cigarettes, and many cocktails or other choice beverages. You go there tired, and you leave there worn out. Not that a two days' stay at these delightful places is without its charms, but let us consider its fatigue, and that is not what we need.

Do you know what I would do in your place? I would hunt out a little corner in Savoy, Vercors, or Switzerland, a little corner not generally known, somewhat cool, near, or in, the mountains, la Bauche for instance, etc. If there is a lake or river near your joy will be complete. There are still some charming places, frequented by simple people, little spots where a flannel shirt is not looked at askance, one of these rare corners where they do not steer you willy nilly to the infectious betting table or roulette wheel.

I find some excuse for these dangerous pastimes when they have their elegant setting. In fact, to look at them comfortably seated in a commodious armchair, à la Mapple, with the necessary swarm of elegant women and rastas with shining hair, gives rise to reflections of sublime philosophy. You enjoy the spectacle without being obliged to pay for the lights. But the mournful, tiny casino, with its small cheap holes—how dreary—and its betting table most often in the open air, with its smoking argand lamps, its fat croupier and lamplighter; do you know him? Do you know the old gentleman with the military figure who insists upon giving you tips? He does not play any more; he lost 35 louis since his arrival (in reality he is the husband of the sleepy dame who

keeps the bar of American Drinks). And the good young man who came there for an air cure becoming brutalized three hours before dinner and three hours afterward, trying to make up his first loss of 5 louis. His good mother is pleading with him timidly, for Jules is handsome, he is nearly 18, he is a man. But Jules will not let up until he resembles in shape the proverbial squeezed lemon.

For this reason, my dear Jack, for your present and future tranquillity avoid these dangerous demoralizing places. You like fishing, I believe. There is a way to take a complete rest! Seated in the shade, on the bank of the river, to watch your cork, or in a boat trailing your line, that's the thing, take my word for it. Go to bed betimes, rise about 7, and away to the river. Do not tire yourself out, and in the afternoon a long siesta. Do not think of business, do not read too much, but if you have brought some scientific magazines you can, while fishing, read and think over what has been published these last few months. Have you read in *L'Odontologie* "Innervation of the Pulpa," by Mummery, and in *La Province Dentaire,* "Contribution to the Study of the Part of Anaphylaxis in the Mechanism of Accidents Occurring During Local Anesthesia," by Fichot, and "Culture of the Professional Dentist," by J. Tellier, or "Amputation of the Pulp," by Boenneken? No. Well, profit by them, they are contributions of the very highest order.

Replying to another of your questions. The fact is, if you do not really need a rest, you could go to the dental meeting at X——. It would even be well for you to acquire the habit of attending these meetings and take an active part therein. All our meetings would gain by being shaken up from the scientific viewpoint. They need infusion of young blood, new blood, and surely, the elements are there and in great number. In general these meetings have more of a recreative end, a slight tendency toward an egoistic endeavor to bring people on the same side together, for the personal satisfaction of a few, and these few always the same. There you see in the arena the small fry listening to, and accepting almost without discussion, the fine words spoken by the uncontradicted masters. These masters are very often faddists, they have for years been riding their chargers which are often nothing more than mere hobby horses which they handle with real skill. They throw bouquets at each other, although these are not always nice. They chatter for a long time, "I, I who" . . . . , "I have been using my method for fifteen years, and still have to have the first failure." The subjects treated are often obscure, or in many cases without practical timely interest to the profession. The orator soars to ethereal heights where his very humble audience finds it difficult to follow, and many will say, "the deuce, I thought they were going to 'talk teeth,' and that I

would learn something; this is simply a mutual admiration congress I have come to." You will say that I am unkind. Not so, but I have seen much and heard much.

The professional meetings should frankly tend to one single end: Mutual, practical, and scientific education. This desire, moreover, is latent or manifest with a great many of us, but for its perfect realization a complete independence of character and ideas is necessary. Instead of that, what do we see? The already limited number of active professionals desirous of upholding morally or effectively the orderly working of these meetings, reduced still further when one thinks that it divides into a number of groups which most of the time are hostile to one another. If we were to unite all the branches frankly interested in the development of the dental sciences, it would be hard to group together two or three hundred individuals interested. You will allow that that is little, considering that we have in France nearly 4,000 or more practising dentists and medecins-dentistes. And that means that with the great majority the scientific side of dentistry is a despised factor.

Now, this small handful of well meaning people find an evil pleasure in still further subdividing into a dozen groups, each with its own professional politics, its aspirations, its different programs.

Tell me of a meeting of practitioners, a meeting wholly inspired by the fruits to be gathered from general and disinterested collaboration, a meeting weaned from all professional political opinion, where it can be said that all interesting activities to whatever education that are beholden, or from whatever parish where they may feel obliged to communicate, are nevertheless, there, side by side, desirous of bringing a tribute of fresh knowledge for the good of all.

And then, my dear Jack, in such a group you would have to be counted on, you younger ones, to bring your stock, great or small, of observation and studies. And what will be your surprise, once you overcome your stage fright, to find that you often know as much as the average of those who, be it only from devotedness, monopolize both the clap-trap and the compliments.

Give us some simple remarks, papers of timely usefulness, be a demonstrator. Say, "I do this, and am going to show you why and how I operate." And above all do not be taken off your feet by the savor of certain programs permitting such throbbing papers as, for example, "Dividing of the follicle of the wisdom tooth of judges of the peace," or "Decay at the neck of teeth as generally found with wholesale lemon dealers," or again, "Pressure of salivary calculus in its progressive stage in Laplanders." Study simple questions, but particularly those of present timeliness: What is to be done to decrease the high percentage of de-

cay in children's teeth; Septicemia of the Buccal Cavity and its Influence upon the General State of Health; Gingival-alveolar Suppuration, its Origin, Progress, How to stop it; On the Abuse of Springs as Means of Retention of Apparatus, etc.

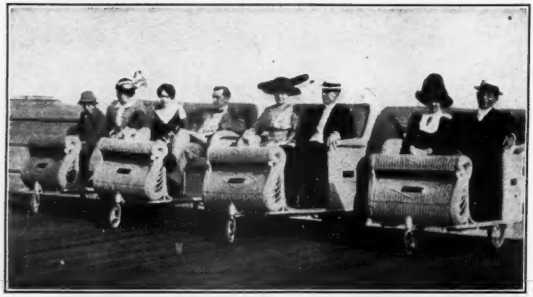
I will stop, and bon voyage, my dear Jack. Adhere to my program so that I may find you in good shape when I come to see you in September.

CHARLEY.

BROMURAL IN DENTISTRY

A POTENT and harmless sedative such as Bromural-Knoll is excellent for nervous and frightened children who resist all attempts at dental treatment. This preparation exerts a selective action upon the cerebrum without giving rise to disagreeable after-effects.

After doses of 0. 3g, or 1 tablet the children appear quiet after about 20 minutes. Their resisting powers are gone, they seem apathetic and allow themselves to be treated quite readily. Several cavities could be filled in succession without any trouble and injections and extractions could be easily done. If larger operations were necessary, such as chiseling or manipulations on the mucous membranes, 0. 6g. or 2 tablets bromural was given to children over 10 years old. After 20 minutes, the injection could be made and 10 minutes later, the operation was successfully performed. In this way three roots could be resected in one sitting in a very frightened and excited child without any struggling on part of the patient.—DR. G. ULKAN, Dentist, Chief of the Dental Clinic, Berlin-Wilmersdorf. (*Deutsche Zahnaerztliche Wochenschrift*, 1913, No. 15.)



PRACTICAL HINTS

[This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions and Answers should be sent direct to him.]*

PORCELAIN INLAY TECHNIQUE.—In the construction of porcelain inlays, burnish a matrix in the cavity thoroughly, then force melted sticky wax into the matrix, filling it up flush with the margins. Chill and with slightly warmed instrument, attach to the wax and draw out the matrix entirely free from distortion.—E. T. TINKER, D.D.S., MINNEAPOLIS, MINN., *Texas Dental Journal.*

A CASE FROM PRACTICE.†—This case, from practice, was a left lateral root prepared as if making a Davis or Logan. Instead of porcelain being used, a crown was taken from a previously extracted left lateral and adapted by casting a base of pure gold. The color and mould were practically the same, and the root, being cut well up labially, eliminated the presence of gold. It made a beautiful case and not easily detected.—LEO F. BANGHART, DETROIT, MICH., *The Dental Summary.*

REMOVING A POST FROM ROOT.—In removing a post from a root with a post puller, cut a piece of German silver to go over end of root, puncture, allow post to pass through and then remove the post. This eliminates the possibility of splitting the root in case the end should be uneven.—E. T. TINKER, D.D.S., MINNEAPOLIS, *Dental Review.*

IN BURNISHING PLATINUM MATRICES.—In burnishing a matrix for a porcelain inlay cavity when it is difficult to prevent the platinum from shifting, burnish one part thoroughly and force slightly warmed temporary stopping into that part of the cavity. This holds the matrix firmly in place and permits the completion of the burnishing without any distortion.—ELMER S. BEST, D.D.S., MINNEAPOLIS, *Dental Review.*

THE RUBBER FILE, TO CLEAN.—The file used in the laboratory to finish vulcanite work soon becomes clogged by the rubber wedging in the depressions between the teeth. Pouring chloroform over it causes this rubber to curl up and loosen so that it can be readily removed by any kind of brush, and thereby making the file cut like a new file.—W. H. CRAFT, D.D.S., COALPORT, PA., *Dental Brief.*

*In order to make this department as live, entertaining and helpful as possible, questions and answers, as well as hints of a practical nature, are solicited.

† Clinic Michigan State Dental Society, 1912.

Gold Inlay.—Melt a spatula full of hot inlay wax into Keeton's mat gold and take impression of the cavity the same as you would with wax. Remove the wax cold and invest in any good inlay or bridge investment completely, except a small place about four millimeters in diameter through which to flow solder, and after the investment is dry place it on the fire and heat it up, keeping the heat underneath the investment all the while. Cut the solder into strips and when the matrix is hot enough flow in the solder. This is a method of utilizing your mat gold scraps, and you do not have to pay for the wax at gold prices. Dr. Emery Ballou, of Dodge City, Kansas, taught this method in 1895.—Dayton D. Campbell, D.D.S., Kansas City, Mo., *Dental Summary.*

A File Broach.—Use worn-out barbed broaches, clip off barbed end that the fine end may not be too long. Have a new No. 3 gold file and place broach upon a hard, smooth, wood surface, bone is better, and with considerable pressure push file, rolling broach underneath it which at once makes a miniature file of the fine end. This little instrument is of great value in enlarging small root canals by just filing, eliminating all danger of breaking broaches in root canal work and leaving no excuse for not reaching the apex of any root. You might discover that some root canals travel a longer route than they used to seem. Vary the sizes, then follow with twist broaches. Where a broach has been broken off in a canal, file around it, flood canal with Buckley's Eucalyptol Comp., it is a good lubricant and will aid in removing broach end. When in doubt as to broach end being in the canal a sure test is to place cotton, dipped in oil of cloves, in the canal, its contact with steel will turn it blue-black in a short time.

A long, smooth broach rolled under the file will carry cotton to the apex and return. To remove old gutta-percha root fillings, flood with Buckley's Eucalyptol Comp., begin filling with broach and you will work through in a "jiffy" and discover where the other fellow or yourself fell short in the effort.—George Mack, D.D.S., Chicago, Ill., *Dental Review.*

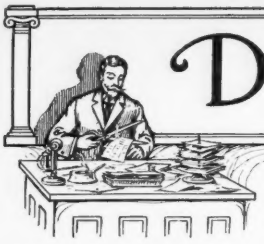
Non-Cohesive Gold.—E. T. Darby states that cohesive foil is made non-cohesive by exposing it to the influence of ammonia gas—also that it is prepared by a thin film of iron being deposited upon the surface of the leaf, basing this supposition upon the fact that when melted non-cohesive foil shows a reddish brown tint, while cohesive foil remains bright. Two layers of cohesive foil made non-cohesive by any of these methods may be rubbed together without adhering, and it is this non-adhering or "slipping" property that we must have to insure the desired working quality if it is to be inserted in the cavity by the wedging principle.—E. P. Dameron, St. Louis, *Dental Review.*

Saving His Man's Teeth.—"Well, little man," said I to a boy of six years, after making repairs to his temporary teeth according to his mother's instructions, "I find a big hole in two of your permanent six-year molar teeth." I showed them to him in the hand mirror, but he was not impressed. I continued, "these big molar teeth are the first sign that you are to become a MAN. They are your man's teeth, you don't want to let THEM decay, do you? Tell your mother that you have two big cavities in your man's teeth and they must be filled." The mother came in the office in a few days and said, "What is it about my boy's man's teeth, he hasn't given me any peace since he was here; every day he has called my attention to the fact that his 'MAN'S TEETH' were decayed, and you said he must not let them go without filling." I explained to her the need of filling these important teeth and the boy came with gladness to have them repaired; he is keeping a lookout for trouble in the remaining ones and fulfilling instructions as to keeping them clean. Try this scheme on your next kid patient. They don't know anything about six-year molars but MAN'S TEETH hits them under the belt every time.—Dental Dispensary Record, *Texas Dental Journal.*

How To Sweat Bands.—Cut the band as you would for soldering, make an edge-to-edge contact (not a lap joint), clean surfaces and close adaptions are essential. Use very little borax and apply a thin flame from blow-pipe until a white heat is obtained. A surface melting will result and will run in the joint of the band. At this point great care must be exercised not to burn your band, because a brittle band will result if too much heat is applied. With a little practice one can learn to sweat bands as you would solder them, and it is far better than soldering for the following reasons:

1. When finished no seams can be detected.
2. Stronger than solder joint.
3. If crowns are used for bridgework you will never draw solder out of the joint in filling your dummies.
4. Your scrap gold is not contaminated with solder and can be used for inlay work.
5. A considerable sum is saved on 22k solder.—C. S. Cuden, D.D.S., Pittsburgh, Pa., *Dental Summary.*

(I find no difficulty in sweating bands as here described in an ordinary Bunsen burner flame. With a little practice any man with ordinary skill can sweat his bands without any difficulty whatever. Besides the above enumerated advantages, it is a time saver. It has no disadvantages.—V. C. Smedley, D.D.S.)



DIGESTS

THE RELATIONSHIP OF THE THYROID GLAND TO DENTISTRY*

By H. Ewan Waller, M.R.C.S.Eng., L.R.C.P.Lond.

(*Continued*)

I have just mentioned that in some cases of thyroid deficiency we meet with excessive salivation, as in cretinism, but in other cases we find undue thirst, probably depending on diminished secretion of saliva. Arguing superficially, it might be said that the very fact of these two opposite conditions being found shows that there is no relationship between the thyroid activity and the reaction of saliva. Yet I claim that there is a connection, because both of these opposite conditions will yield to thyroid medication; and further, the position is open to a very simple explanation. Assume that the partnership between the thyroid and parotid glands exists, and take the case of the cretin with his salivation. If the two glands work in harmony, the unwearied appeal for thyroid secretion which is made by the organism of the cretin, yet never answered, will be an equally unwearied appeal to the parotid gland, which responds continuously. On the other hand, in cases of secondary thyroid exhaustion—the result of overworking the thyroid—the parotid may be equally exhausted, and deficient or defective salivation be the result. This idea is further supported by the want of appetite exhibited by the thyroid deficients. They have little desire for ordinary food, but like something savory to tickle the appetite and provoke a flow of saliva. Does not this fact suggest a jaded and exhausted condition of the salivary glands?

With regard to the saliva, the point I am most anxious to emphasize is the chemical reaction. Normal saliva is alkaline. The saliva in cases of thyroid deficiency is acid. Acidity of the saliva is an extremely common fault, and it always puzzles me why this factor is passed over so lightly. The present-day view of dental caries is that two factors are necessary—namely, decalcification of the teeth by acids, and subsequent microbic invasion. It is supposed, and with good reason, that these acids are produced by carbohydrate fermentation through the agency of bacteria. And it has been further ascertained

* Read before the Central Counties Branch at the Birmingham Dental Hospital on December 7, 1911.

that when acid fermentation has proceeded up to a certain point—namely, when the strength of the acid produced is 75 per cent.—the bacterial activity is inhibited, and no further acid can be produced till some of that already present has been neutralized. In the absence of alkaline saliva this neutralization takes place at the expense of the teeth, and so caries begins. Then the bacteria revive and produce more acid, and caries goes on. Very good. But is it not a self-evident fact that if there were a continual flow of limpid and alkaline saliva, any such acid products would be neutralized as fast as they were formed, and so could never harm the teeth?

But given an acid or even a neutral saliva, or even a deficiency of saliva, and the acid products of fermentation are free to attack the teeth themselves as fast, or as slowly, as best suits the chemical changes. The whole proposition appears so simple in this light that I feel as though I must have overlooked some stupendous factor which completely annihilates it. If so, please tell me gently afterwards. But first let me take refuge behind another wall of argument. I have now tested (at the opening of the salivary ducts) many salivæ with litmus paper, and can tell you my results. We must bear in mind, however, that the subjects whose saliva I have tested have mostly been patients, and therefore perhaps not fair samples to generalize from. Yet I think my results are instructive. Owing to anatomical considerations I have made no attempt to differentiate between the sublingual and submaxillary saliva, which to some extent are mixed as they issue from Wharton's duct and the contiguous sublingual ducts, but there is no difficulty in obtaining a separate test for the parotid saliva. In *all* my cases *the parotid saliva was either much more acid*, or *much less alkaline*, than that issuing from Wharton's duct. One may say, then, that if the alkalinity of the saliva deviates from the normal to a slight degree, the deviation first becomes evident in the parotid saliva, which loses alkalinity, or becomes actively acid.

Now if my supposition be correct, that loss of alkalinity of the saliva is the leading factor of dental caries, it is evident that those teeth in the neighborhood of the parotid duct would be the most likely to succumb to caries, because, owing to the special liability of the parotid saliva to become acid, this is the weakest point of defense in the mouth.

Where does the parotid duct open? The anatomy books tell us opposite the second molar tooth of the upper jaw. But as children under twelve years of age do not possess a second molar tooth in the meaning of the Act, I have taken the liberty of forming my own conclusions on this matter. The number of observations has been strictly

limited, but the results will prove approximately accurate. In a child of two the duct opens opposite the second temporary molar. In a child of six the duct opens between the second temporary molar and the situation of the first permanent molar. At the age of twelve or fourteen the duct is opposite the first permanent molar, and in adult life opposite the second permanent molar. Obviously, then, the *relative* position of the duct moves progressively backward as the teeth move progressively forward; and throughout childhood the teeth most exposed to the influence of acid parotid saliva are the temporary fives and the sixes. Are any teeth more subject to decay than these?

Now consider the argument from the opposite standpoint. If there is any alkalinity left in the saliva, where do we find it? The answer is in the front of the mouth, near the openings of the submaxillary and sublingual ducts. From the source it wells up, and the teeth first to get the benefit are the lower incisors, which in consequence are the least prone to decay of all the teeth.

This brings us to the chemistry of the saliva. By reference to analysis we find that the principal salt of the parotid saliva is calcium carbonate. But calcium carbonate, as such, is insoluble in water, and it is only held in solution in the saliva by the presence of Co_2, or in other words, as calcium bicarbonate. It is perfectly reasonable, then, to suppose that alkalinity or acidity of the parotid saliva is merely a question of the preponderance of the alkaline calcium, or of the carbonic acid which dissolves it. Calcium bicarbonate would readily neutralize such an acid as lactic acid, which is supposed to be the decalcifying agent arising from carbohydrate fermentation, and naturally the less calcium bicarbonate present in the parotid saliva, the less protection would be afforded to the teeth, and the more acid would be the reaction to litmus paper. One might, of course, raise the discussion as to whether carbonic acid itself harms the teeth. Chemically it can, because the teeth are composed largely of calcium phosphate and carbonate, and carbonic acid is able to combine with both these salts, and so dissolve them. It combines with calcium carbonate to form soluble calcium bicarbonate, and it removes one of the three calcium molecules from the insoluble tri-calcium phosphate, forming a calcium bicarbonate and a soluble di-calcium phosphate, which is the phosphate normally present in the sublingual and submaxillary saliva. Theoretically, then, there should be no free carbonic acid in the mouth. It ought only to be present in combination with calcium, as calcium bicarbonate, which gives an alkaline reaction to litmus paper, not an acid one. Now as the parotid saliva contains no further calcium beyond this small amount of bicarbonate, it has no reserves to fall back on, and in consequence

very readily becomes acid if there is even a slight deficiency of calcium.

But the submaxillary saliva is better off. It holds in solution not only calcium bicarbonate but also di-calcium phosphate. Chemically speaking, one of the calcium molecules of this di-calcium phosphate could be detached in times of extreme necessity, leaving only an acid calcium phosphate. I have not yet proved that this ever occurs, and one could only find it in cases of extreme acidity of the saliva. I have only recently been testing for it and may find a case presently, though I hardly expect it. The test is done with methyl-orange paper which turns red if acidity be due to mineral acids, such as an acid phosphate, but does not react to carbonic acid, as litmus does. And without discussing the value of the ever-present sodium chloride as a chemical solvent of calcium phosphate, the submaxillary saliva has further alkaline reserves of magnesium carbonate and phosphate which chemically would have a similar action to the calcium salts.

The sublingual saliva has only calcium phosphate. Now I readily admit that all this is what one may term paper chemistry. That is to say, the chemical equations all work out satisfactorily on paper, but I cannot prove that the reactions necessarily occur in the mouth. Yet it is likely that they do, because they are very natural and are fully in accordance with the observed clinical facts. And I claim that this straightforward chemistry provides a ready explanation for the vagaries of dental caries as shown in the *symmetrical* decay of the sixes and sevens and the temporary molars, and the relative immunity of the lower incisors.

It explains why dental caries is more prone to occur during youth than adult life, inasmuch as shortage of calcium is far less likely to occur in the adult than in the youth whose bones are rapidly developing and making enormous demands on the supplies. It explains why dental caries is so constantly associated with pregnancy and lactation when there is a special drain on the lime salts. These arguments are old, and are so excellent that they have been used numberless times in regard to the teeth, till it was pointed out that dental caries starts in the enamel of fully calcified teeth and can hardly depend on the nutrition of this enamel, inasmuch as it apparently does not require any. But the arguments are still sound, being based on clinical evidence, which is a difficult thing to upset, only they must be rearranged. They must be applied to the calcium content of the saliva instead of to the teeth, and the thyroid factor must be considered. There is not necessarily a real calcium deficiency at all, but for some unexplained reason, unless the thyroid is working properly the calcium cannot be

utilized. Youth, pregnancy and lactation are all phases of life characterized by special demands on the thyroid gland, which is therefore more likely to be upset at these times, and possibly the salivary glands are sympathetically affected. This seems the more likely because I have found certain cases with a high calcium index as estimated from the blood, yet with acid saliva, and another case with a low calcium index and alkaline saliva. These were all hospital in-patients and suffering from more or less serious illnesses which might readily upset the secretory functions of the thyroid and salivary glands. So though calcium was abundant, in most cases they could not avail themselves of it.

The trend of present-day investigation into the causes of dental caries is to concentrate energy on discovering what foods are most likely to lodge on the teeth, and, having so lodged, to produce the highest degree of fermentation. If normal human saliva were acid or even neutral, this inquiry might solve the whole problem. But, considered apart from the defensive power of the saliva, the fermentation theory is beset with enormous difficulties. Taken alone, the fermentation theory does not explain why caries is so often symmetrical as regards the sixes, when all the other teeth are sound. Why should food particles lodge *symmetrically* in the lower sixes more frequently than in any other teeth? And why more in the upper sixes than the lower sevens or bicuspids? Why more in the fissures of these teeth than in the crevices between them and their neighbors? And why do certain crowded and overlapping teeth often escape caries when the sixes have succumbed? Again, why does not the food lodge and ferment in the teeth of gouty people just as much as in the mouths of others? Yet gouty people are certainly less prone to caries. How does the fermentation theory account for cases of arrested caries? Why does the food suddenly cease to lodge in the crevices where it has already done much mischief? But do not misunderstand me. I am not mocking the fermentation theory. It has been shown that if you can prevent fermentation you can greatly decrease, perhaps abolish, caries. But it cannot answer the whole problem, unless you take it in conjunction with the presence or absence of the defensive power of the saliva. These two factors together will, I think, meet every case. A change from acid to alkaline saliva will readily explain the cases of arrested caries, which arrest is obviously associated with an improvement in the general health.—*The British Dental Journal.*

(*This article is expected to be concluded in the August number.*)

COCAIN AND SUBSTITUTE DRUGS

Ever since the introduction of cocain into materia medica for the purpose of producing local anæsthesia, quite a number of substitutes have been placed before the profession, for which superiority in one respect or another is claimed over the original cocain. The more prominent members of this group are tropacocain, the eucains, acoin, nirvanin, alypin, stovain, novocain, and very recently, quinin and urea hydrochlorid. None of these compounds, with the exception of novocain, has proved satisfactory for the purpose in view. The classical researches of Braun have established certain factors which are imperative to the value of a local anæsthetic. These factors concern their relationship to the tissues, in regard to their toxicity, irritation, solubility, and penetration, and to the toleration of adrenalin.

Although the novocain has the same anæsthetizing power as cocain when injected into the tissues, it is not as easily absorbed on a mucous surface and therefore, for anæsthetizing by local application, cocain is preferable to novocain. Not the least of its good points is that it will combine with adrenalin in any proportion, without lessening the effect of the latter. When adrenalin is added to the novocain solution, it prolongs its action, lessens the danger of general intoxication, and enables the operator to use a much smaller dose than he could use when he uses either one separately. At the same time, however, it increases the length of time required for the drug to act. Sometimes fifteen minutes must elapse before anæsthesia is accomplished, when adrenalin has been added to the solution.

The dose of novocain is about one-third of a grain in a $1\frac{1}{2}$ or 2 per cent. solution. A $\frac{1}{5}$ to $\frac{1}{2}$ per cent. solution of novocain combined with adrenalin chlorid in physiological salt solution has been frequently injected by us in quantities of 2 grains of the drug for a single anæsthesia. The addition of the adrenalin, with its powerful vasoconstrictor action, confines the injected novocain to a given area. It is the important factor which prevents the ready absorption of both drugs, and consequently largely nullifies poisonous results.

Absorption of Poisonous Drugs.—There are some persons, usually those who might be described as "nervous" upon whom it is very difficult to establish a satisfactory local anæsthesia; and it is difficult to state when a patient may collapse under a local anæsthetic. It is merely a matter of using common sense to decide whether a patient shall receive a local anæsthetic or not. If, for instance, a patient appears to be in a condition that indicates general derangement of the system, cocain, novocain, or any other anæsthetic is not indicated. It is important to note that novocain is much safer than other drugs of this

nature. The danger of injecting in a pus-pocket must always be borne in mind, for the injection can easily be pressed on a head into sound tissue. The injection should be made into the sound tissue and in such a way as to encircle the diseased area, or the nerve to be locked.

Danger from the injection of cocain or its substitutes is lessened by limiting the general absorption of the injected fluid, which may contain very poisonous drugs. We have, however, a good working principle to go by—that local anæmia or ischemia prevents the rapid absorption of fluids that are injected into a circumscribed area. Moreover, if the absorption of the fluid is retarded, there results an increase in the local action of the poisonous drugs; and increased local action means increased local consumption of the poisonous drugs, and consequently less danger from general absorption.

In order to get the best results from the injection of anæsthetizing drugs, the solution should be isotonic with the body fluids.

Osmotic pressure is a physical phenomenon which is dependent on the number of molecules of salt present in a solution, and on their power of dissociation. Equal osmotic pressure becomes established when the salt solution is of the same concentration on each side of a permeable animal membrane. The membrane of a living cell readily absorbs distilled water, but if, on the other hand, the surrounding fluid is a highly concentrated salt solution, the solution absorbs water from the cell; and the cell shrinks and finally dies. This process is called necrobiosis.

The pain, or tissue necrosis that frequently follows an injection is usually due to using a solution that is not isotonic with the tissue fluids.

By means of still another physical law the proper concentration of fluids for intracellular injection may be determined. All aqueous solutions possessing an equal freezing point have equal osmotic pressure. A physical salt solution which at body temperature has the same osmotic pressure as the tissue fluids can be injected into the loose connective tissue under the skin in moderate quantity, and neither swelling nor shrinking of the cell will occur. A simple wheal will form, which causes no irritation, and consequently no pain is felt.

A solution of novocain for dental purposes may be prepared as follows:

Novocain	.648
Sodium Chlorid	.259
Distilled Water	29.573

To each syringeful (2 cubic centimeters) add 2 drops adrenalin chlorid solution when used.

A sterile solution may be made extemporaneously by dissolving the necessary amount of water. A suitable tablet may be prepared as follows:

Novocain	.022
Synthetic Suprarenin Hydrochlorid	.000054
Sodium Chlorid	.022

One tablet in $1\frac{1}{5}$ cubic centimeters of sterile water makes a 2 per cent. solution of novocain ready for immediate use.

For cutaneous operations we seldom use a solution of greater strength than $\frac{1}{2}$ per cent. novocain. Usually $\frac{1}{5}$ per cent. solution properly injected is sufficient. For cutaneous anæsthesia a less amount of the adrenalin chlorid solution is used, one drop of the 1:1000 adrenalin chlorid solution to ten cubic centimeters of anæsthetic solution being sufficient. If a too concentrated solution of adrenalin chlorid is used, it will produce gangrene of the skin.

Solutions for hypodermic purposes should preferably be made fresh when needed. A small glass dish and a dropping bottle constitute the simple outfit for dental purposes.

The novocain and sodium chlorid may be boiled indefinitely, but the amount evaporated should be replaced with sterile water before the solution is used. The adrenalin will not stand boiling, neither will it keep after it has been added to the aqueous solution.—From "Surgery of Diseases of the Mouth and Jaw." By V. P. Blair, M.D.

SOCIETY AND OTHER NOTES

Officers of Societies are invited to make announcements here of meetings and other events of interest.

INDIANA.

The annual meeting of the Northern Indiana Dental Society will take place at the Great Steel City of Gary, September 23, 24 and 25, 1913.—W. Leroy Myer, *Secretary.*

MISSOURI.

The next Annual Meeting of the National Association of Dental Faculties will take place at the Hotel Baltimore, Kansas City, Mo., beginning at 10 A.M. on Friday, July 4th. The Executive Committee will meet at 9 o'clock on the same morning at the same place.—B. Holly Smith, *Chairman.*

MONTANA.

The Montana State Board of Dental Examiners will hold their Annual Session in Helena, Mont., July 14–17.—G. A. Chevigny, Butte, Mont., *Secretary.*

NEW JERSEY.

The Forty-third Annual Convention of the New Jersey State Dental Society will be held in the Beach Auditorium at Asbury Park, N. J., July 16–18, 1913, beginning on Wednesday, July 16, at 10 A.M.—EDWIN W. HARLAN, 47 Crescent Ave., Jersey City, *Secretary.*

VIRGINIA.

The Fifteenth Annual Meeting of the Southern Branch of the National Dental Association will be held at the Chamberlin Hotel, Old Point Comfort, Va., July 22d–25th, inclusive. The Virginia State Dental Society will meet conjointly with the Southern Branch at that time.—THOMAS MOORE, Branch of National Dental Association.

WEST VIRGINIA.

The Seventh Annual Meeting of the West Virginia State Dental Society will be held in the Assembly Room of the Chancellor Hotel, Parkersburg, W. Va., Aug. 13–15, 1913.—FRANK L. WEIGHT, *Secretary.*

WISCONSIN.

On account of the conflicting dates of the National Dental Association, the Wisconsin State Dental Society will hold its Forty-third Annual Meeting, July 22d–24th, at Madison, Wis.—O. G. KRAUSE, *Secretary.*

ANNOUNCEMENT

for the

NATIONAL MOUTH HYGIENE ASSOCIATION'S SECOND ANNUAL MEETING.

The second Annual Meeting of the National Mouth Hygiene Association will be held in Kansas City, Mo., July 9–12, 1913.

The Board of Governors will meet at the Hotel Baltimore at 9 A.M. on July 9th, 10th and 11th, to consider questions to be presented to the general body. These meetings are open to members of the Association. Those having matters which they wish to present to the Association for consideration must present them to the Board at one of these meetings.

The regular meeting of the Association consists of three sessions:

Friday at 1:30 P.M.
Friday at 8:00 P.M. (Open to the general public)
Saturday at 9:00 A.M.

A very interesting and instructive literary program is to be presented.

The Association has charge of the Mouth Hygiene Section of the Fourth International Congress on School Hygiene, and the Board of Governors' plan is to have, in so far as possible, the program duplicated at both the National Meeting and the Congress.

The most important subject to be presented to the Association will be the question of "Ways and Means for Conducting the Campaign of the Association in its General Presentation of Mouth Hygiene to the Public." A complete, practical, economic and co-operative plan which will permit every section of the country to begin an active appeal to the general public will be presented for consideration. It is desirable that every member be present when this important subject is presented for discussion.

—W. G. EBERSOLE, *Secretary-Treasurer,* 800 Schofield Bldg., Cleveland, Ohio.

NATIONAL DENTAL ASSOCIATION

ALL reputable practitioners of dentistry and medicine are cordially invited to attend the 1913 session of the National Dental Association, which will be held in Kansas City, Mo., July 8th to the 11th.

This will probably be the most important meeting in the history of this Association, owing to the fact that all the State Dental Societies, that have met since the Washington meeting, have voted to become Constituents of the National.

The officers and committees have prepared an interesting program, but it is impossible to incorporate the Clinical Program in the Journal announcements; however, the Clinic Committee does not expect to present the number of Clinics which have been listed for the past few years, but have planned to present a smaller number, which are classified so that they will be most interesting.

The following is the literary program: "President's Address," Frank O. Hetrick, Ottawa, Kan.; "Scientific Foundation Fund," Weston A. Price, Cleveland, Ohio;

Convention Hall, Kansas City.

"Orthodontia and Its Relation to Dentistry," Roscoe A. Day, San Francisco, Cal.; "Crown and Bridge Work," J. L. Howell, Denver, Col.; "The Missing Steps in Platework," Gail W. Hamilton, Council Bluffs, Ia.; "The Saliva," Percy H. Howe, Boston, Mass.; "Conflicting Opinions Concerning the Manufacture and Use of Alloys for Dental Amalgams," Marcus L. Ward, Ann Arbor, Mich. A Preliminary Report on the Action of As 203, Herman Prinz, Philadelphia, Pa.; "Physiological Action of Nitrous Oxide Oxygen, Analgesia and Anesthesia," Carl G. Parsons, (M.D.), Denver, Col.; "Something of the Etiology and Early Pathology of the Diseases of the Peridental Membrane, with Suggestions as to Treatment," Arthur D. Black, Chicago, Ill.; "The Value of the Radiograph in the Practice of Modern Dentistry," Howard R. Raper, Indianapolis, Ind.; "Dental Educational Harmony," G. S. Junkerman, Cincinnati, Ohio; "Prophylaxis, Illustrated with Lantern Slides," Burton Lee Thorpe, St. Louis, Mo.; "The Etiology and Progress of Dental Caries," Edgar D. Coolidge, Chicago, Ill.; "The Application in Practice of What is Known Concerning the Diagnosis and Treatment of Diseases of the Dental Pulp," Harry B. Tileston, Louisville, Ky.; "Periapical Infection," Clarence J. Grieves, Baltimore, Md.

Railroad and Hotel Information:—The Central Passenger Association, the Western Passenger Association and the Southwestern Passenger Association, have granted

an open rate of 2 cents per mile in each direction in their territory, with a minimum excursion fare of $1.00.

FRANK O. HETRICK, Ottawa, Kan., *President.*

HOMER C. BROWN, 185 E. State St., Columbus, Ohio, *Recording Secretary.*

XI PSI PHI HEADQUARTERS

NATIONAL DENTAL ASSOCIATION

HEADQUARTERS for the members of the Xi Psi Phi Fraternity will be established at the Baltimore Hotel, Kansas City, Mo.

Special accommodations have been made for train service from Chicago and all members of the Fraternity east of Chicago are invited to avail themselves of this service. For further information address C. C. MARKEY, D.D.S., Sec., 1740 Greenleaf Ave., Chicago, Ill.

THE FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE

AMONG the prominent speakers expected at the Fourth International Congress on School Hygiene at Buffalo the last week in August, according to Secretary-General Dr. Thomas A. Storey, of the College of the City of New York, are the following notable delegates from abroad:

Professor H. Griesbach of Mulhausen, Alsace, Germany, Founder of these International Congresses and President of the First Congress held in Nuremburg in 1904.

Dr. L. Dufestel of Paris, France, Medical Inspector of the Paris Schools, and Secretary-General of the Third International Congress on School Hygiene.

Dr. James Kerr of London, England, Member of the London County Council, for many years an active leader in the field of medical inspection.

Dr. Otto Grennes of Christiana, Norway, Organizer of the Statistical Exhibit, Department of Education for the Norway Centenary Exhibition in 1914.

Dr. Ernesto Cacace of Naples, Italy, Professor in Pediatry, Royal University of Naples.

Professor L. V. Liebermann of Budapest, Hungary, Professor Hygienic Institute, Royal University of Budapest.

Dr. R. Kaz of St. Petersburg, Russia, Consulting and School Oculist.

Dr. Frederick Lorentz of Berlin, Germany, Member of the Society for School Hygiene, Berlin Teachers.

Dr. W. Weichardt of Erlangen, Germany, Bacteriological Research Laboratory.

Dr. J. Bayerthal of Worms, Germany.

Dr. J. Brandau of Cassell, Germany.

Dr. Marx Lobsien of Kiel, Germany.

Dr. Theodore Altschul of Prague, Germany, Sanitary Inspector.

Dr. D. E. Jessen of Strassburg, Germany, International Commission on Mouth Hygiene.

Dr. Cornelio Budinich of Trieste, Austria, Architect.

Dr. Mathilde Gstettner of Vienna, Austria, Assistant Oculist, Vienna Polyclinic High School Teacher and Secretary Austrial School Hygiene Association.

Dr. Leo Burgerstein, Professor of the Royal University of Vienna, Austria.

Dr. R. H. Crowley of Bradford, England, Board of Education.

Dr. Cecil Reddie of the New School, Abbottsholme, England.

Dr. M. C. Schuyten of Antwerp, Belgium, Professor of the New College, Brussels.

Dr. Albin Lenhardtson of Stockholm, Sweden, Director of Municipal School, Dental Clinic.

Dr. Hansen Hakonson of Trondhjem, Norway, Head Master, School Hygiene.

Dr. Daumegon, Director of Health Department, City of Narbone, France.